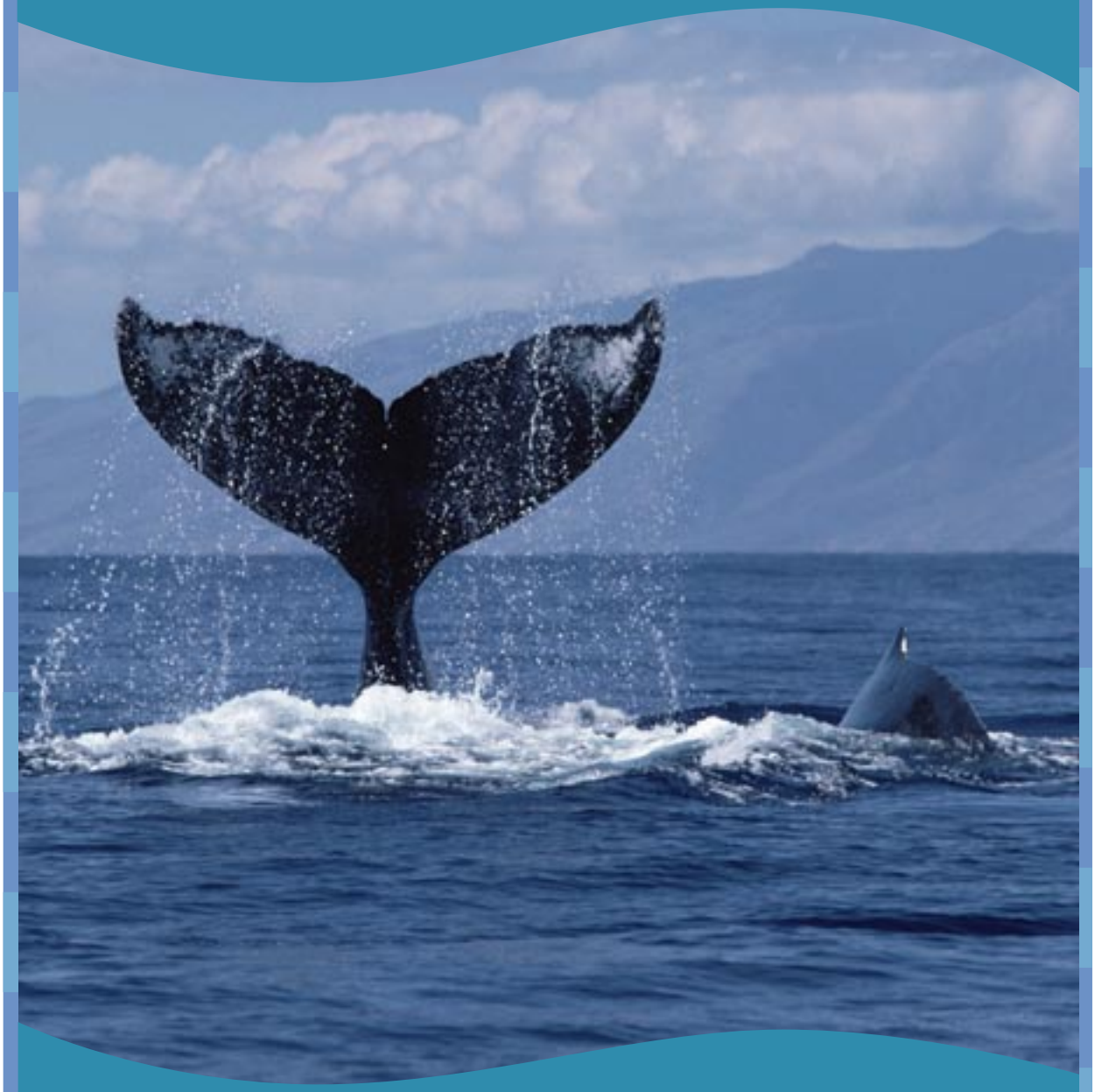
National Marine Sanctuaries ™

Hawaiian Islands Humpback Whale

Sanctuary Ocean Count



Project Handbook

SANCTUARY OCEAN COUNT

CONTACT SHEET

BIG ISLAND
For questions, please contact the O`ahu Sanctuary office at:
1-888-55WHALE ext. 253
(1-888-559-4253)

KAUA`I SANCTUARY OFFICE
Kukui Grove Executive Center
4370 Kukui Grove, Suite 206
Lihu`e, Hawai`i 96766
Phone: (808) 246-2860
Fax: (808) 246-2862

O`AHU SANCTUARY OFFICE
Hawai`i Kai Corporate Plaza
6600 Kalaniana`ole Highway, Suite 301
Honolulu, Hawai`i 96825
Phone: (808) 397-2651 ext. 253 or Toll Free 1-888-55WHALE ext. 253
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WEBSITE
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NATIONAL MARINE SANCTUARIES
HAWAIIAN ISLANDS HUMPBACK WHALE

Cover Photo: Flip Nicklin/Minden Pictures

NOVEMBER 2005

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PROJECT BACKGROUND

Each winter, from approximately December to May, a portion of the endangered North Pacific humpback whale population migrates from their feeding grounds in Alaska to the warm waters of Hawai'i to engage in breeding activities.

Hawai'i's pristine marine environment is considered to be one of the most important breeding, calving and nursing grounds for humpback whales in the North Pacific. For that reason, the Hawaiian Islands Humpback Whale National Marine Sanctuary was designated to protect humpback whales and their habitat in Hawai'i. Humpback whale population numbers are still relatively unknown. In an effort to determine approximate population numbers and monitor distribution patterns over the years, the Sanctuary sponsors community events such as the Sanctuary Ocean Count.

The Sanctuary Ocean Count was initiated as a means to provide Hawai'i residents and visitors with the opportunity to actively participate in evaluating the status of humpback whales in their breeding grounds by conducting a yearly shore-based census during the peak breeding season. Although the census does not claim to provide scientifically accurate results regarding abundance and distribution patterns of humpback whales around the main Hawaiian Islands, it serves as a tool to supplement scientific information gathered from other research activities. The count also provides information on how whales use inshore waters on an average peak season day, it also serves to promote public awareness about humpback whales, the Sanctuary, and shore-based whale watching opportunities.

The first count was conducted in February 1996 on O'ahu, with approximately 150 volunteers. In 1999, the Big Island was added to the effort. Kaua'i began participating in 2000 and Kaho'olawe began participating in 2002. To date, the Sanctuary Ocean Count covers 60 sites on four islands, with an enlistment of over 2000 volunteers. In the future, the Sanctuary hopes to expand this project to other islands.

PROJECT INSTRUCTIONS

SAFETY GUIDELINES

Safety is a primary concern for all of our volunteers. If weather or environmental conditions become dangerous during the ocean count, stop the effort and vacate the area to ensure the safety of yourself and others. We recommend that you take all necessary precautions while whale watching, as weather and environmental conditions at some of these shore sites can be unpredictable. We advise all volunteers to wear proper clothing and footwear at all times. Never turn your back to the ocean or walk along steep cliffs along the ocean.

IN THE FIELD

Wear appropriate clothing based on the morning's anticipated weather conditions. Essential items include hats, sunglasses, sunscreen, water, watches, something to write on (e.g., clipboard), and pens or pencils. A pair of binoculars or a spotting scope is very helpful but not required. Optional items include beach chairs or mats, rain jackets or umbrellas and cellular telephones for emergencies.

SITE INFORMATION

Please review the site descriptions in the handbook in order to prepare for the Sanctuary Ocean Count. Facilities and restrictions vary for each location. Please note some sites have specific restrictions (e.g., no pets, no food in area, permit must be obtained). Site descriptions are updated annually based on comments from volunteers. Please feel free to provide additional information about your site to Sanctuary staff so information can remain current. After the count, feel free to provide additional information about your site to the count coordinators so that the information can be kept up-to-date.

SITE LEADER RESPONSIBILITIES

Mandatory Site Leader Training:

- Site leaders are selected for each Ocean Count Site prior to the training session.
- Site leaders will learn the methods to be used in conducting the count.
- They will also learn more about the roles of a site leader.

Following Site Leader Training:

- Be prepared to receive calls from volunteer participants at your site. If possible, record each group member's name and phone number on the volunteer contact sheets provided in the back of the handbook (count coordinators will provide the contact site leader with a list of volunteers prior to each count).
- Select an area and time to meet at your site location on the day of the count. Consideration should be given to safety, comfort, and the level of impact to the site.
- Remind participants in your group to bring essential items.
- Find out if any participants require special needs and inform count coordinators.

On the day of the Event:

- Arrange to have all volunteers meet at the site at least one half-hour prior to the count (7:30 a.m.) to go over instructions and get settled. Some sites may need to meet earlier depending on the location (see Site Descriptions). Provide guidance on how to sight whales and how the data collection will be done. A brief background on humpback whales is also helpful since many participants may not be familiar with them.
- Sign in all participants and make sure everyone provides their contact information.
- Designate two volunteers to complete the Site Map form (follow instructions provided under Data Collection).
- Designate the remaining volunteers to complete the Behavior Sheets.
- Fill out the Census Sheets.
- Keep a copy of the whale behavior information sheet available for reference.
- Call the appropriate Sanctuary office within one hour of the count to report census and volunteer information so a tally can be provided to the media.
- Mail or deliver all completed data sheets and forms to the appropriate office.

VOLUNTEER RESPONSIBILITIES

- Call your site leader prior to the count to receive meeting instructions, etc.
- Arrive at your site at the appropriate time on the day of the count. Be sure to bring along any necessary items (e.g., hat, sunglasses, water, binoculars).
- Follow the instructions given by the site leader(s). Detailed descriptions of volunteer duties are available in the Data Collection Instructions and Data Collection Forms section of the handbook.
- Read the Notice of Caution and sign in on Participant Sign-in Sheet.
- Turn in your completed data sheets to the site leader.

If you have any questions,
please feel free to call the appropriate Sanctuary office.

Big Island & Kahoʻolawe 1-888-55WHALE ext. 253
Kaua'i 246-2860
O'ahu 397-2651 ext. 253

Mahalo for all of your time and effort.

DATA COLLECTION INSTRUCTIONS

Each site will have 3 types of datasheets:

- Census Sheet to be completed by site leaders
- Behavior Sheet to be completed by each volunteer
- Site Map Sheet to be completed by a selected team of 2 volunteers

CENSUS SHEET (SITE LEADERS ONLY)

1. Position yourself at the site.
2. Start counting precisely at the times specified on the sheet (0800, 0830, 0900, 0930, 1000,1030, 1100, 1130, 1200).
3. Slowly scan your site from left to right, spending an equal amount of time in each area of water.
4. Each time you see a whale, tally it on the sheet using a bar (in the space for Adults if it is an adult and in the space for Calves if it is a calf).
5. Do not recount whales within a 15 minute period.
6. Finish counting exactly 15 minutes after you started (0815, 0845, 0915, 0945, 1015, 1045, 1115, 1145, 1215).
7. Only count whales that are at the surface during the 15 minutes of the count.
8. Tally your bars and put the total sum in parenthesis next to the bars. This will help the data analysts who might otherwise have to interpret II as either “eleven” or “two”.
9. Complete the visibility chart on the third page of the Census Sheet for each indicated time period.
10. Make sure you have included the site’s elevation on your census sheet. This information is available in the Site Description section of the handbook.

If you see something other than a humpback whale during the count:

1. Establish what it is (spinner dolphin, or simply some kind of dolphin, or other animal).
2. Turtles and seals can be reported to the Sanctuary but do not need to be counted on the census sheet.
3. Do not try to establish if there are calves, count all animals as adults.
4. Write the total number of animals in the appropriate space.

BEHAVIOR SHEET (ALL VOLUNTEERS)

It is advisable that volunteers work in pairs, one monitoring whales and calling behaviors, the other writing them down. Volunteers can exchange tasks. This activity will be conducted in half-hour increments continuously from 0800 - 1200.

1. Start and stop observations precisely at the specified times on the data sheet.
2. Monitor all the whales that can be seen from your position.
3. The data sheet identifies various humpback whale behaviors. Each time a behavior is witnessed, mark the appropriate column on the data sheet with a bar. Describe what is happening in your own words in the comments section on the Behavior Sheet. Use additional sheets if necessary. Record the time before the description. At the end of each 30-minute period, total the bars under each behavior and circle that number. If you take a break please note your absence rather than a "0" count.
4. Complete the visibility chart on the back of the Behavior Sheet for each time period.

How to fill in columns on the data sheet:

- **NUMBER OF ADULTS -** Write in the total number of animals that appear to be adults. The only way to estimate this is by noting animal size, which is usually apparent by the size of the blow.
- **NUMBER OF CALVES -** This is often difficult to estimate. If you are not able to establish the number of calves, indicate if calves were present (P) or absent (A).
- **BREACH -** Record the number of times this behavior occurs. A breach occurs when the whale breaks clear of the water with its full body and returns to the water with a large splash.
- **SLAP -** Record the number of times this behavior occurs. Here, a whale slaps its tail, head, or pectoral fin on the water creating small splashes, but the main body of the animal remains underwater.
- **BLOW -** Record the number of times this behavior occurs. A blow occurs when you see a spout (the whale is taking a breath). Sometimes you may not see a blow, but the whale surfaces and then dives again.
- **FLUKE UP DIVE -** Record the number of times this behavior occurs. In this behavior, the tail of the whale appears out of the water in an upward arch and slowly rolls underwater in conjunction with a dive.

Some general terms to use in the comment section:

- **TRAVELING** - A continuous directional movement with frequent surface intervals.
- **SURFACE ACTIVE -** Whale is breaching, tail or fluke slapping, spy-hopping.
- **NURSING -** Whale is motionless. Calf's snout is below and on the side of the body.
- **STATIONARY DIVE -** Whale dives for prolonged periods of time and surfaces at the same location. This is an indication of singing or resting for humpback whales.
- **MILLING -** Whales remain at the surface; moving slowly and with no directionality.

SITE MAP SHEET (SELECTED VOLUNTEERS)

Prior to 10:30 a.m., the site leader should assign 2 volunteers to complete this task. This activity will be conducted from 10:30 a.m. to 11:00 a.m.

1. Prior to 10:30 a.m., draw a map of your site, with special care given to the geographic layout of the area. Note which direction is North, South, East and West.
2. Record the elevation of the site in the space provided. This information is available in the site description section of the handbook.
3. Complete the visibility section on the Site Map based on conditions between 10:30 a.m. and 11:00 a.m.
4. Mark your position at 10:30 a.m. and do not change this position until you have finished mapping all the whales present. Scan the water from 10:30 a.m. to 11:00 a.m.
5. Draw a circle for the position of each pod of whales you spot. If the pod is a single whale, draw a small circle. Draw a bigger circle for pods of more than one whale. Indicate how many whales each circle corresponds to (next to, or inside of each circle).
6. If the circle represents a mother/calf pair, indicate this with "M/C." For a mother/calf/escort write "M/C/E."
7. Estimate your distance from each pod using the distance estimation tool and sheet (explained below). It will be necessary to know the approximate elevation at your site.
8. Draw lines from your location on the map to the whale and write the distance along the line.

How to measure the distance of a whale from the observer:

The distance between the observed whale and the observer will be calculated using a ruler and a distance table (page 9).

Using the Ruler:

1. The ruler is to be held vertically in one hand outstretched to the target whale's location. The 0 inch mark on the ruler is to be lined up with the horizon.
2. When the target is spotted, slide the encircling index card up or down the ruler so that the black line on the index card lines up with the whale.
3. Use your thumb to hold the index card in place and note the measurement on the ruler (in sixteenths of an inch).

Using the Table:

1. Determine your observation elevation by adding the elevation of your ocean count site (in feet above sea level) plus an additional 5 feet (to account for height of the oberser's outstretched hand above the ground). Find the nearest observation elevation on the table. This is the second row of numbers starting at 10 feet.
2. Once you have found your nearest observation elevation, search down the column for the measurement you have taken from the ruler (in sixteenths of an inch).
3. Look over to the corresponding number (along the same row) in column one. This is the distance in miles between the observer and the whale. This number can be expressed as a range (example: .78 to .95 miles)
4. Note this distance on your observation form.

For additional help see the example on the back of the Map Sheet.

SANCTUARY OCEAN COUNT

This is a distance-estimating cross-reference table for selected values of distance and elevation.

The distance (in miles) to an object of interest is listed in the left column.
The observation elevation above sea level (in feet) is listed along the top row. The distance to the horizon is listed above each elevation value for reference.
The calculated value for the "apparent space" (between "the horizon line" and an object of interest) is listed at the intersection of each row and column combination.

Note: The calculated value for the "apparent space" is rounded to the nearest 1/16th of an inch.

The use of the table requires the following steps:

1). The "apparent space", between the horizon line and the line of sight to the object of interest, is measured with a ruler held 24 inches from the observer's eyes.
2). In the column labeled with the value nearest to that of the observer's elevation above sea level, locate the value nearest to that of the "apparent space" measured.
3). In the left-hand column, on the same row as the selected value of "apparent space", is listed the value to the object of interest (in miles).

Note: Although accuracy may be improved with the use of interpolation, accuracy will be most improved by careful measurement of the "apparent space".
This is especially true when the "apparent space" is small and the distance to the object of interest is large.

Distance in miles	4.3	6.0	7.4	8.5	9.5	10.4	11.3	12.0	12.8	13.5	15.4	16.8	18.6	20.4	21.9	24.6	26.9	30.1	33.0
	10	20	30	40	50	60	70	80	90	100	130	155	190	230	265	335	400	500	600
0.25	3/16	6/16	8/16	11/16	14/16	1 1/16	1 4/16	1 7/16	1 10/16	1 13/16	2 5/16	2 12/16	3 7/16	4 2/16	4 12/16	6	7 3/16	9	10 13/16
0.28	2/16	5/16	8/16	10/16	13/16	15/16	1 2/16	1 5/16	1 7/16	1 10/16	2 2/16	2 8/16	3 2/16	3 12/16	4 5/16	5 8/16	6 9/16	8 3/16	9 13/16
0.30	2/16	5/16	7/16	9/16	12/16	14/16	1	1 3/16	1 5/16	1 8/16	1 15/16	2 5/16	2 13/16	3 6/16	3 15/16	5	5 15/16	7 7/16	8 15/16
0.33	2/16	4/16	6/16	8/16	11/16	13/16	15/16	1 1/16	1 3/16	1 5/16	1 12/16	2 1/16	2 9/16	3 1/16	3 9/16	4 8/16	5 6/16	6 12/16	8 2/16
0.37	2/16	4/16	6/16	8/16	10/16	12/16	13/16	15/16	1 1/16	1 3/16	1 9/16	1 14/16	2 5/16	2 13/16	3 4/16	4 2/16	4 14/16	6 2/16	7 6/16
0.40	2/16	3/16	5/16	7/16	9/16	10/16	12/16	14/16	1	1 2/16	1 7/16	1 11/16	2 2/16	2 9/16	2 15/16	3 12/16	4 7/16	5 9/16	6 11/16
0.44	1/16	3/16	5/16	6/16	8/16	9/16	11/16	13/16	14/16	1	1 5/16	1 9/16	1 14/16	2 5/16	2 11/16	3 6/16	4 1/16	5 1/16	6 1/16
0.49	1/16	3/16	4/16	6/16	7/16	9/16	10/16	11/16	13/16	14/16	1 3/16	1 6/16	1 12/16	2 2/16	2 7/16	3 1/16	3 11/16	4 9/16	5 8/16
0.54	1/16	2/16	4/16	5/16	6/16	8/16	9/16	10/16	12/16	13/16	1 1/16	1 4/16	1 9/16	1 14/16	2 3/16	2 12/16	3 5/16	4 3/16	5
0.59	1/16	2/16	3/16	5/16	6/16	7/16	8/16	9/16	11/16	12/16	15/16	1 2/16	1 7/16	1 12/16	2	2 8/16	3	3 12/16	4 9/16
0.65	1/16	2/16	3/16	4/16	5/16	6/16	7/16	8/16	10/16	11/16	14/16	1 1/16	1 5/16	1 9/16	1 13/16	2 5/16	2 12/16	3 7/16	4 2/16
0.71	1/16	2/16	3/16	4/16	5/16	6/16	7/16	8/16	9/16	10/16	13/16	15/16	1 3/16	1 7/16	1 10/16	2 1/16	2 8/16	3 2/16	3 12/16
0.78	1/16	2/16	2/16	3/16	4/16	5/16	6/16	7/16	8/16	9/16	11/16	14/16	1 1/16	1 5/16	1 8/16	1 14/16	2 4/16	2 13/16	3 6/16
0.86	1/16	1/16	2/16	3/16	4/16	5/16	5/16	6/16	7/16	8/16	10/16	12/16	15/16	1 3/16	1 5/16	1 11/16	2 1/16	2 9/16	3 1/16
0.93	1/16	1/16	2/16	3/16	3/16	4/16	5/16	6/16	6/16	7/16	9/16	11/16	14/16	1 1/16	1 3/16	1 9/16	1 14/16	2 5/16	2 13/16
1.04	1/16	1/16	2/16	2/16	3/16	4/16	4/16	5/16	6/16	6/16	8/16	10/16	12/16	15/16	1 2/16	1 6/16	1 11/16	2 2/16	2 8/16
1.15	0	1/16	2/16	2/16	3/16	3/16	4/16	5/16	5/16	6/16	8/16	9/16	11/16	14/16	1	1 4/16	1 8/16	1 14/16	2 5/16
1.26	0	1/16	1/16	2/16	2/16	3/16	4/16	4/16	5/16	5/16	7/16	8/16	10/16	12/16	14/16	1 2/16	1 6/16	1 12/16	2 1/16
1.39	0	1/16	1/16	2/16	2/16	3/16	3/16	4/16	4/16	5/16	6/16	7/16	9/16	11/16	13/16	1 1/16	1 4/16	1 9/16	1 14/16
1.53	0	1/16	1/16	2/16	2/16	2/16	3/16	3/16	4/16	4/16	6/16	7/16	8/16	10/16	12/16	15/16	1 2/16	1 7/16	1 11/16
1.68	0	1/16	1/16	1/16	2/16	2/16	3/16	3/16	3/16	4/16	5/16	6/16	7/16	9/16	11/16	13/16	1	1 4/16	1 9/16
1.85	0	1/16	1/16	1/16	2/16	2/16	3/16	3/16	3/16	3/16	4/16	5/16	7/16	8/16	10/16	12/16	15/16	1 2/16	1 6/16
2.04	0	0	1/16	1/16	1/16	2/16	2/16	2/16	3/16	3/16	4/16	5/16	6/16	7/16	9/16	11/16	13/16	1 1/16	1 4/16
2.24	0	0	1/16	1/16	1/16	2/16	2/16	2/16	2/16	3/16	3/16	4/16	5/16	7/16	8/16	10/16	12/16	15/16	1 2/16
2.46	0	0	1/16	1/16	1/16	1/16	2/16	2/16	2/16	2/16	3/16	4/16	5/16	6/16	7/16	9/16	11/16	14/16	1
2.71	0	0	0	1/16	1/16	1/16	1/16	2/16	2/16	2/16	3/16	3/16	4/16	5/16	6/16	8/16	10/16	12/16	15/16
2.98	0	0	0	0	1/16	1/16	1/16	1/16	2/16	2/16	3/16	3/16	4/16	5/16	6/16	7/16	9/16	11/16	13/16
3.28	0	0	0	0	1/16	1/16	1/16	1/16	1/16	2/16	2/16	3/16	3/16	4/16	5/16	6/16	8/16	10/16	12/16
3.61	0	0	0	0	0	1/16	1/16	1/16	1/16	1/16	2/16	2/16	3/16	4/16	4/16	6/16	7/16	9/16	11/16
3.97	0	0	0	0	0	1/16	1/16	1/16	1/16	1/16	2/16	2/16	3/16	3/16	4/16	5/16	6/16	8/16	10/16
4.36	-0	0	0	0	0	1/16	1/16	1/16	1/16	1/16	2/16	2/16	2/16	3/16	4/16	5/16	6/16	7/16	9/16
4.80	-0	0	0	0	0	0	1/16	1/16	1/16	1/16	1/16	2/16	2/16	3/16	3/16	4/16	5/16	6/16	8/16
5.28	-0	0	0	0	0	0	1/16	1/16	1/16	1/16	1/16	1/16	2/16	2/16	3/16	4/16	4/16	6/16	7/16
5.81	-0	0	0	0	0	0	0	1/16	1/16	1/16	1/16	1/16	2/16	2/16	2/16	3/16	4/16	5/16	6/16
6.39	-0	-0	0	0	0	0	0	0	1/16	1/16	1/16	1/16	1/16	2/16	2/16	3/16	3/16	4/16	6/16
7.03	-0	-0	0	0	0	0	0	0	0	0	1/16	1/16	1/16	2/16	2/16	2/16	3/16	4/16	5/16

AT THE END OF THE COUNT

1. Fill in the recorder's name, address and phone number as well as the required site information on the data sheets and hand them to the site leader.
2. Make sure each sheet is legible and complete.
3. You are welcome to include notes and explanations on an additional sheet

If you have any questions,
please feel free to call the appropriate Sanctuary office.

Big Island 1-888-55-WHALE ext. 253
Kaua'i 246-2860
O'ahu 397-2651 ext. 253

Mahalo to Leo Brenaman who developed the distance tool and table for the 2001 count on Kaua'i and shared his invention with the Sanctuary staff.

SANCTUARY OCEAN COUNT PARTICIPANT SIGN-IN SHEET

Date: _____

Site Name: _____

Site Number: _____

Please Print All Information Clearly

In consideration of the acceptance of my offer to volunteer for the Ocean Count project of the Hawaiian Islands Humpback Whale National Marine Sanctuary, I hereby affirm that I will not except nor demand any compensation for my service.

	NAME	ADDRESS	PHONE #	EMAIL
1	*(Site Leader)*			
2	*(Site Leader)*			
3				
4				
5				
6				
7				
8				
9				
10				
11				
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13				
14				
15				
16				
17				
18				
19				
20				

SANCTUARY OCEAN COUNT

CENSUS SHEET (SAMPLE)

Date: _____ Site #: _____ Site Name: _____ Site Elevation: _____

Site Leader: _____ Phone #: _____

*** Observe area and log the number of each species seen. Please note that time increments are for 15 minutes only.**
*** At the end of the Count call in the # of Adults and # of Calves for each of the time increments shown below.**

TIME	SPECIES	ADULTS	CALVES	COMMENTS
0800-0815	Humpback Whales	12	4	Whales in three pods
-	Spinner Dolphins	0	n/a	
-	Other Species	0	n/a	Specify species:
-	Other Species		n/a	Specify species:

TIME	SPECIES	ADULTS	CALVES	COMMENTS
0830-845	Humpback Whales	8	2	Whales in two pods
-	Spinner Dolphins	0	n/a	
-	Other Species	0	n/a	Specify species:
-	Other Species		n/a	Specify species:

TIME	SPECIES	ADULTS	CALVES	COMMENTS
0900-915	Humpback Whales	12	4	Whales in three pods
-	Spinner Dolphins	15	n/a	
-	Other Species	5	n/a	Specify species: Bottlenose dolphins
-	Other Species		n/a	Specify species:

TIME	SPECIES	ADULTS	CALVES	COMMENTS
0930-945	Humpback Whales	3	0	May have missed a whale
-	Spinner Dolphins	0	n/a	
-	Other Species	0	n/a	Specify species:
-	Other Species		n/a	Specify species:

TIME	SPECIES	ADULTS	CALVES	COMMENTS
1000-1015	Humpback Whales	1	2	One calf was bigger and could have been misidentified
-	Spinner Dolphins	0	n/a	
-	Other Species	0	n/a	Specify species:
-	Other Species		n/a	Specify species:

SANCTUARY OCEAN COUNT
CENSUS SHEET (SAMPLE)
VISIBILITY CHECK SHEET

1. 0800-0900

Fog	[Y]	N	Heavy Medium [Light]	Rain	Y	[N]	Heavy Medium Light	Haze	Y	[N]	Heavy Medium Light	Wind	Y	[N]	Strong Medium Light
Foam	Y	[N]	Lots Some None	Swell	[Y]	N	High [Medium] Small/None	Visibility Code _____ **(do not write in here – code will be decided by data analyst)**							

2. 0901-1000

Fog	[Y]	N	Heavy Medium [Light]	Rain	Y	[N]	Heavy Medium Light	Haze	Y	[N]	Heavy Medium Light	Wind	Y	[N]	Strong Medium Light
Foam	Y	[N]	Lots Some [None]	Swell	[Y]	N	High Medium [Small/None]	Visibility Code _____ **(do not write in here – code will be decided by data analyst)**							

3. 1001-1100

Fog	Y	[N]	Heavy Medium Light	Rain	Y	[N]	Heavy Medium Light	Haze	Y	[N]	Heavy Medium Light	Wind	[Y]	N	Strong Medium [Light]
Foam	Y	[N]	Lots Some None	Swell	Y	[N]	High Medium Small/None	Visibility Code _____ **(do not write in here – code will be decided by data analyst)**							

4. 1101-1215

Fog	Y	[N]	Heavy Medium Light	Rain	Y	[N]	Heavy Medium Light	Haze	Y	[N]	Heavy Medium Light	Wind	[Y]	N	Strong [Medium] Light
Foam	[Y]	N	Lots [Some] None	Swell	Y	[N]	High Medium Small/None	Visibility Code _____ **(do not write in here – code will be decided by data analyst)**							

Please mail or deliver completed forms to the appropriate Sanctuary office.

SANCTUARY OCEAN COUNT
CENSUS SHEET

Date: _____ Site #: _____ Site Name: _____ Site Elevation: _____

Site Leader: _____ Phone #: _____

*** Observe area and log the number of each species seen. Please note that time increments are for 15 minutes only.**
*** At the end of the Count call in the # of Adults and # of Calves for each of the time increments shown below.**

TIME	SPECIES	ADULTS	CALVES	COMMENTS
0800-0815	Humpback Whales			
-	Spinner Dolphins		n/a	
-	Other Species		n/a	Specify species:
-	Other Species		n/a	Specify species:

TIME	SPECIES	ADULTS	CALVES	COMMENTS
0830-0845	Humpback Whales			
-	Spinner Dolphins		n/a	
-	Other Species		n/a	Specify species:
-	Other Species		n/a	Specify species:

TIME	SPECIES	ADULTS	CALVES	COMMENTS
0900-0915	Humpback Whales			
-	Spinner Dolphins		n/a	
-	Other Species		n/a	Specify species:
-	Other Species		n/a	Specify species:

TIME	SPECIES	ADULTS	CALVES	COMMENTS
0930-0945	Humpback Whales			
-	Spinner Dolphins		n/a	
-	Other Species		n/a	Specify species:
-	Other Species		n/a	Specify species:

TIME	SPECIES	ADULTS	CALVES	COMMENTS
1000-1015	Humpback Whales			
-	Spinner Dolphins		n/a	
-	Other Species		n/a	Specify species:
-	Other Species		n/a	Specify species:

SANCTUARY OCEAN COUNT
CENSUS SHEET

Date: _____ Site #: _____ Site Name: _____ Site Elevation: _____

Site Leader: _____ Phone #: _____

*** Observe area and log the number of each species seen. Please note that time increments are for 15 minutes only.**
*** At the end of the Count call in the # of Adults and # of Calves for each of the time increments shown below.**

TIME	SPECIES	ADULTS	CALVES	COMMENTS
1030-1045	Humpback Whales			
-	Spinner Dolphins		n/a	
-	Other Species		n/a	Specify species:
-	Other Species		n/a	Specify species:

TIME	SPECIES	ADULTS	CALVES	COMMENTS
1100-1115	Humpback Whales			
-	Spinner Dolphins		n/a	
-	Other Species		n/a	Specify species:
-	Other Species		n/a	Specify species:

TIME	SPECIES	ADULTS	CALVES	COMMENTS
1130-1145	Humpback Whales			
-	Spinner Dolphins		n/a	
-	Other Species		n/a	Specify species:
-	Other Species		n/a	Specify species:

TIME	SPECIES	ADULTS	CALVES	COMMENTS
1200-1215	Humpback Whales			
-	Spinner Dolphins		n/a	
-	Other Species		n/a	Specify species:
-	Other Species		n/a	Specify species:

SANCTUARY OCEAN COUNT

CENSUS SHEET

VISIBILITY CHECK SHEET

1. 0800-0900

Fog	Y	N	Heavy Medium Light	Rain	Y	N	Heavy Medium Light	Haze	Y	N	Heavy Medium Light	Wind	Y	N	Strong Medium Light
Foam	Y	N	Lots Some None	Swell	Y	N	High Medium Small/None	Visibility Code _____ **(do not write in here – code will be decided by data analyst)**							

2. 0901-1000

Fog	Y	N	Heavy Medium Light	Rain	Y	N	Heavy Medium Light	Haze	Y	N	Heavy Medium Light	Wind	Y	N	Strong Medium Light
Foam	Y	N	Lots Some None	Swell	Y	N	High Medium Small/None	Visibility Code _____ **(do not write in here – code will be decided by data analyst)**							

3. 1001-1100

Fog	Y	N	Heavy Medium Light	Rain	Y	N	Heavy Medium Light	Haze	Y	N	Heavy Medium Light	Wind	Y	N	Strong Medium Light
Foam	Y	N	Lots Some None	Swell	Y	N	High Medium Small/None	Visibility Code _____ **(do not write in here – code will be decided by data analyst)**							

4. 1101-1215

Fog	Y	N	Heavy Medium Light	Rain	Y	N	Heavy Medium Light	Haze	Y	N	Heavy Medium Light	Wind	Y	N	Strong Medium Light
Foam	Y	N	Lots Some None	Swell	Y	N	High Medium Small/None	Visibility Code _____ **(do not write in here – code will be decided by data analyst)**							

Please mail or deliver completed forms to the appropriate Sanctuary office.

SANCTUARY OCEAN COUNT

BEHAVIOR SHEET

(SAMPLE)

Name: _____ Island: _____

Address: _____ Site # / Name: _____

_____ Date: _____

Phone: _____ Start Time: _____

E-Mail: _____ End Time: _____

Observe humpback whale activity at your site:

Time	Number of Adults	Number of Calves	Breach	Slap (Pectoral fin, Fluke, Head)	Blow	Fluke Up Dive
0800-0830	2	1	7	2	0	1
0831-0900	2	1	0	5	0	1
0901-0930	3	1	0	10	0	2
0931-1000	3	1	15	3	0	3
1001-1030	2	0	2	1	0	5
1031-1100	4	2	3	0	1	2
1101-1130	10	2	0	0	2	8
1131-1200	1	0	1	7	0	3

Describe the behavior if none of the above is occurring (Are the whales moving out of the area? Are they diving for long periods of time?):

0942 – The 3 whales are a mother/calf/escort type of pod and the calf is performing most of the breaching. Mother is recalling the calf with tail slaps.

1022 – The previous group left the area and two whales arrived in separate pods. The main activity is prolonged dives. Not much time is spent at the surface.

1048 – Mother/calf/escort pod (3) plus mother/calf pod two miles apart. All whales are moving through the area.

1115 – Lots of whale activity. Most whales appear to be moving through. Long dives.

1

SANCTUARY OCEAN COUNT

BEHAVIOR SHEET

(SAMPLE)

Date: _____ Island: _____ Site # / Name: _____ / _____

Name of Observer: _____

Visibility (use the scheme provided below to summarize visibility status for each hour)

CONTINUE WITH YOUR COMMENTS HERE

1. 0800-0900

Fog	Y	[N]	Heavy Medium [Light]	Rain	Y	[N]	Heavy Medium Light	Haze	Y	[N]	Heavy Medium Light	Wind	Y	[N]	Strong Medium Light
Foam	Y	[N]	Lots Some None	Swell	[Y]	N	High [Medium] Small/None	Visibility Code _____ **(do not write here – code will be decided by data analyst)**							

2. 0901-1000

Fog	Y	[N]	Heavy Medium [Light]	Rain	Y	[N]	Heavy Medium Light	Haze	Y	[N]	Heavy Medium Light	Wind	Y	[N]	Strong Medium Light
Foam	Y	[N]	Lots Some [None]	Swell	[Y]	N	High Medium [Small/None]	Visibility Code _____ **(do not write here – code will be decided by data analyst)**							

3. 1001-1100

Fog	Y	[N]	Heavy Medium Light	Rain	Y	[N]	Heavy Medium Light	Haze	Y	[N]	Heavy Medium Light	Wind	[Y]	N	Strong Medium [Light]
Foam	Y	[N]	Lots Some None	Swell	Y	[N]	High Medium Small/None	Visibility Code _____ **(do not write here – code will be decided by data analyst)**							

4. 1101-1200

Fog	Y	[N]	Heavy Medium Light	Rain	Y	[N]	Heavy Medium Light	Haze	Y	[N]	Heavy Medium Light	Wind	[Y]	N	Strong [Medium] Light
Foam	[Y]	N	Lots [Some] None	Swell	Y	[N]	High Medium Small/None	Visibility Code _____ **(do not write here – code will be decided by data analyst)**							

All whales in the area where in general moving through for the duration of the observations. On one occasion an escort from one 3 whale pod moved to another pod.

Please mail or deliver completed forms to the appropriate Sanctuary office.

2

SANCTUARY OCEAN COUNT
BEHAVIOR SHEET

Name: _____ Island: _____

Address: _____ Site # / Name: _____ / _____

_____ Date: _____

Phone: _____ Start Time: _____

E-Mail: _____ End Time: _____

Observe humpback whale activity at your site:

Time	Number of Adults	Number of Calves	Breach	Slap (Pectoral fin, Fluke, Head)	Blow	Fluke Up Dive
0800-0830						
0831-0900						
0901-0930						
0931-1000						
1001-1030						
1031-1100						
1101-1130						
1131-1200						

SANCTUARY OCEAN COUNT
BEHAVIOR SHEET

Date: _____ Island: _____ Site # / Name: _____ / _____

Name of Observer: _____

Visibility (use the scheme provided below to summarize visibility status for each hour)

CONTINUE WITH YOUR COMMENTS HERE

1. 0800-0900

Fog	Y	N	Heavy Medium Light	Rain	Y	N	Heavy Medium Light	Haze	Y	N	Heavy Medium Light	Wind	Y	N	Strong Medium Light
Foam	Y	N	Lots Some None	Swell	Y	N	High Medium Small/None	Visibility Code _____ **(do not write here – code will be decided by data analyst)**							

2. 0901-1000

Fog	Y	N	Heavy Medium Light	Rain	Y	N	Heavy Medium Light	Haze	Y	N	Heavy Medium Light	Wind	Y	N	Strong Medium Light
Foam	Y	N	Lots Some None	Swell	Y	N	High Medium Small/None	Visibility Code _____ **(do not write here – code will be decided by data analyst)**							

3. 1001-1100

Fog	Y	N	Heavy Medium Light	Rain	Y	N	Heavy Medium Light	Haze	Y	N	Heavy Medium Light	Wind	Y	N	Strong Medium Light
Foam	Y	N	Lots Some None	Swell	Y	N	High Medium Small/None	Visibility Code _____ **(do not write here – code will be decided by data analyst)**							

4. 1101-1200

Fog	Y	N	Heavy Medium Light	Rain	Y	N	Heavy Medium Light	Haze	Y	N	Heavy Medium Light	Wind	Y	N	Strong Medium Light
Foam	Y	N	Lots Some None	Swell	Y	N	High Medium Small/None	Visibility Code _____ **(do not write here – code will be decided by data analyst)**							

Please mail or deliver completed forms to the appropriate Sanctuary office.

2

SANCTUARY OCEAN COUNT
SITE MAP
(SAMPLE)

Date: January 29, 2005 Island: Big Island

Site #: 10 Site Name: Mile Marker 7

Site Elevation listed in Handbook: 180ft. Site Elevation used on Distance Sheet: 190ft

Volunteer Name(s): Joe and Jane Humpback

Visibility:

Fog (Y) N Heavy ~~Medium~~ Light

Rain Y (N) Heavy Medium Light

Haze Y (N) Heavy Medium Light

Wind (Y) N Strong ~~Medium~~ Light

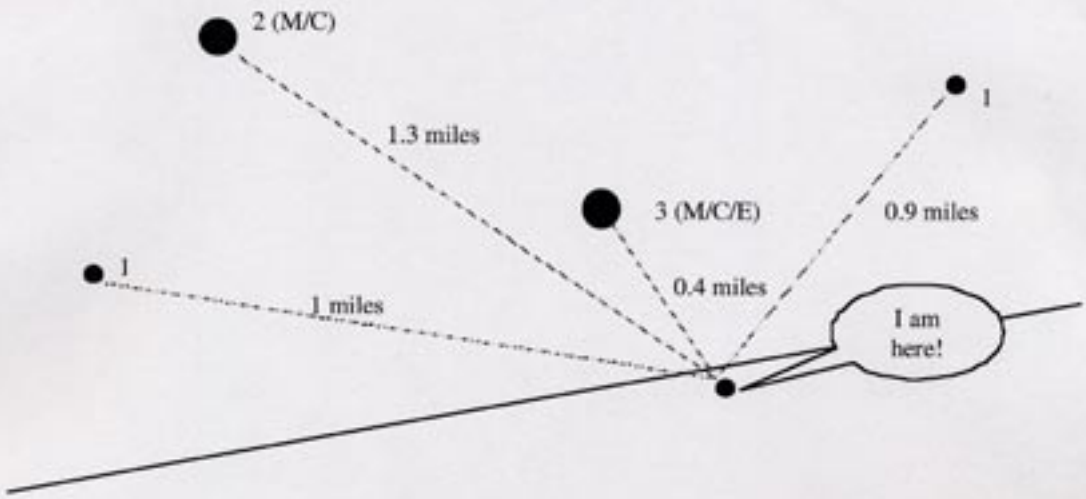
Foam (Y) N Lots Some ~~None~~

Swell (Y) N High Medium ~~Small/None~~

Visibility Code _____
(do not write in here – code will be decided by data analyst)

Observation Time: **1030 a.m. – 1100 a.m.**

Draw a map of your site and specify your observation spot



Between **1030 and 1100** map all the pods present at your site using a dot. Next to the dot, write the number of whales in the pod (could be only one), and if there is a mother/calf pair write (M/C) next to the number, or for a mother/calf/escort group, write (M/C/E). Estimate their distance from you using the *distance estimation sheet* included in your package. Draw lines from you to the whale and write the distance along the line. Be sure to include the elevation of your site in the space provided above. See example provided on the back of this sheet.

Please mail or deliver completed forms to the appropriate Sanctuary office.

SANCTUARY OCEAN COUNT
SITE MAP

Date: _____ Island: _____

Site #: _____ Site Name: _____

Site Elevation listed in Handbook: _____ Site Elevation used on Distance Sheet: _____

Volunteer Name(s): _____

Visibility:

Fog	Y	N	Heavy Medium Light	Rain	Y	N	Heavy Medium Light	Haze	Y	N	Heavy Medium Light	Wind	Y	N	Strong Medium Light
Foam	Y	N	Lots Some None	Swell	Y	N	High Medium Small/None								

Visibility Code _____
(do not write in here – code will be decided by data analyst)

Observation Time: **1030 a.m. – 1100 a.m.**

Draw a map of your site and specify your observation spot

Between **1030 and 1100** map all the pods present at your site using a dot. Next to the dot, write the number of whales in the pod (could be only one), and if there is a mother/calf pair write (M/C) next to the number, or for a mother/calf/escort group, write (M/C/E). Estimate their distance from you using the *distance estimation sheet* included in your package. Draw lines from you to the whale and write the distance along the line. Be sure to include the elevation of your site in the space provided above. See example provided on the back of this sheet.

Please mail or deliver completed forms to the appropriate Sanctuary office.

SITE LEADER COMMENTS AND EVALUATION

(RETURN WITH MARCH DATA)

Name:_____ Date: _____
Site Name: _____ Site #: _____

1. Is this your first time participating as a Site Leader in the Sanctuary Ocean Count?
YES NO

2. Were you provided with sufficient training to lead the count? YES NO
If NO, why?
_____
_____
_____

3. Was the data recording process easy to understand and perform? YES NO
If NO, what would you suggest to make data collection more understandable?
_____
_____
_____

4. How did the Ocean Count experience meet with your expectations?
_____
_____
_____

5. What other suggestions would you offer to make the Ocean Count more enjoyable, effective, or organized?
_____
_____
_____

6. Are you interested in being a Site Leader again next year? YES NO

Please write additional comments on back.

VOLUNTEER COMMENTS AND EVALUATION

Name (Optional): _____ Date: _____
Site Name: _____ Site #: _____

1. Is this your first time participating in the Sanctuary Ocean Count? YES NO

2. Were you provided with sufficient information to conduct the count? YES NO
If NO, why? _____
_____

3. Do you think additional training is needed? _____
If so, what training topics would you like to have covered? _____
_____
_____
_____
_____

4. Was the data recording process easy to understand and perform? YES NO
If NO, what would you suggest to make data collection more understandable?
_____
_____
_____

5. How did the Ocean Count experience meet with your expectations?
_____
_____
_____

6. What other suggestions would you offer to make the Ocean Count more enjoyable, effective or organized?
_____
_____
_____

7. Would you participate again next year? _____
_____

SANCTUARY OCEAN COUNT
SITE SURVEY
(RETURN WITH MARCH DATA)

Please fill out the following information to the best of your ability, especially if the site location is different from what is described in the Site Leader Handbook.

Island: _____ Site Location: _____ Site #: _____

Name of Site Leader: _____ Date: _____

Detailed directions to site:

_____
_____
_____
_____
_____

Access to the site (e.g. hiking, offroad, etc.):

_____
_____
_____

Facilities at the site (Write in YES or NO on the lines provided):

1. Restrooms _____
2. Parking _____
3. Telephone _____
4. Handicapped accessibility _____
5. Drinking water _____
6. Shaded areas _____

Site Characteristics (cultural or historical significance, geographic landmarks, etc.):

_____
_____
_____
_____
_____
_____
_____

HUMPBACK WHALE BEHAVIORS

PHOTO: Suzanne Canja

BLOW

On average, adult humpback whales take a breath every ten to fifteen minutes, but can remain submerged for as long as forty-five minutes. Calves must rise to the surface every three to five minutes.

PHOTO: Suzanne Canja

PEC SLAP

Humpbacks will slap the water's surface with one or both fins simultaneously. The slapping of fins may serve as a communication signal to other whales.

PHOTO: Suzanne Canja

TAIL SLAP

A humpback raises its tail flukes out of the water and slaps them forcefully on the surface of the water. This behavior is often repetitive and may serve as a warning.

PHOTO: Suzanne Canja

PEDUNCLE SLAP

An energetic display where the whale throws its tail out of the water and in the process, slaps its peduncle on the surface.

PHOTO: Suzanne Canja

HEAD RISE or SPY HOP

A whale rises vertically toward the surface, with its head out of the water. Some believe this behavior allows the humpback whale to get a better look at activity going on above the surface.

PHOTO: Doug Perrine/HWRF/Seapics.com/
NOAA Fisheries permit #633

HEAD LUNGE

A competitive display in which the humpback whale lunges forward with its head raised above the water.

PHOTO: Doug Perrine/HWRF/Seapics.com/
NOAA Fisheries permit #882

FLUKE UP DIVE

The tail of the whale appears out of the water in an upward arch and slowly rolls underwater in conjunction with a dive.

PHOTO: Suzanne Canja

BREACH

An acrobatic display where the humpback uses its tail to launch itself out of the water then lands back on the surface with a splash.

WILDLIFE VIEWING RECOMMENDATIONS

The National Oceanographic and Atmospheric Administration's (NOAA) National Ocean Service and NOAA Fisheries are members of the National Watchable Wildlife Program, a collaborative effort by numerous federal and state agencies, environmental groups and private industry working to promote responsible wildlife viewing and nature appreciation. Together, we recommend the following "Code of Conduct" for viewing wild mammals and sea turtles in Hawai'i.

1. Please view wild marine mammals from an appropriate distance - at least 50 yards for dolphins and monk seals. For humpback whales, approaches closer than 100 yards are prohibited by regulation. Using binoculars and telephoto lenses offer a minimally intrusive viewing experience. Please also observe sea turtles from a distance and do not attemp to touch, ride or feed them.

2. Please give spinner dolphins their space in resting areas where mothers and calves are especially vulnerable to human activities.

3. Be aware that feeding wild marine mammals is illegal and feeding a wild marine mammal causes it to become dependent on humans, changes its natural behaviors, and makes it vulnerable to injury from vessel strikes and illness from contaminated or inappropriate food.

4. Always remember that wild marine mammals, like all wild animals, are unpredictable in their behavior, and can seriously injure people.

By following the "Code of Conduct," you can make a difference by ensuring that marine wildlife viewing will be rewarding today and for many generations to come. The National Ocean Service and NOAA Fisheries hope your time spent viewing Hawai'i's marine wildlife is memorable, enjoyable, educational, and safe.

GUIDELINES FOR WHALE WATCHING

As Sanctuary Ocean Count vounteers, you may see a significant amount of recreational and whale watching activity on the water. In past years, volunteers have witnessed incidents of whale harassment and whale approach violations, but were unsure how to report them. The following are federal guidlines for whale watching on the water:

GENERAL

By regulation, no one is allowed to approach closer than 100 yards to a humpback whale. No one is allowed to disrupt the normal behavior or prior activity of a humpback whale by any other act or ommission.

AIRCRAFT

By regulation, no one is allowed to operate any aircraft within 1,000 feet of a humpback whale.

BOATS/VESSELS

No one may maneuver closer than 100 yards of a humpback whale and vessel operators must adhere to the following restriction:

- Never operate faster than the speed of the slowest whale when paralleling or following.
- Always maneuver so as not to separate whales, especially an adult from a calf.
- Never use a vessel to herd or drive whales.

ACCEPTABLE MANEUVERS

- SIDE APPROACH. When a boat is approaching a whale from either side, it may close the distance up to 100 yards and either parallel the whale or follow it at that distance.

- HEAD-ON APPROACH. When a boat is in the path of a whale, it should maneuver out of the whale's path and parallel or follow the whale at a distance of 100 yards.

- REAR APPROACH. When a boat is overtaking a whale, it should close the distance up to 100 yards and adjust its speed to that of the slowest whale.

UNACCEPTABLE MANEUVERS

- Running in front of or cutting across a whale's path.
- Cutting the whale off from deep water.
- Surrounding the whale.
- Placing the vessel between a mother and calf.
- Leapfrogging a whale (a maneuver in which a boat positions itself in front of a whale, waits for it to pass, then leaps in front of the whale again).

Adherence to the above guidelines should prevent violations of the approach prohibitions and will help avoid harassment, which is the disruption of the normal behavioral patterns of humpback whales. Such disruptions are usually manifested by, but not limited to:

- Rapid change in direction and/or speed.
- Escape tactics such as prolonged diving and underwater course changes, underwater exhalation or evasive swimming patterns, including swimming away rapidly on the surface.
- Interruption of breeding, nursing, or resting activities.
- Actions by a female to shield a calf from a boat or human behavior, evidenced by tail swishing, slapping or by other protective movements.
- The abandonment of a previously frequented area.

FOR FURTHER INFORMATION, CONTACT:

NOAA Fisheries Enforcement (808) 541-2727

NOAA Fisheries (808) 973-2937

Hawaiian Islands Humpback Whale National Marine Sanctuary
O'ahu: (808) 397-2651 or 1-888-55WHALE (toll free)
Maui: (808) 879-2818 or 1-800-831-4888 (toll free)
Kaua'i: (808) 246-2860
Big Island: 1-888-55WHALE (toll free)

GUIDELINES FOR DOCUMENTING VIOLATIONS

In order for law enforcement authorities to respond to a reported violation in a timely manner and to successfully apprehend and prosecute violators, certain information is critical. This information must be accurately documented and reported to authorities immediately.

REMEMBER: Witnesses are not to approach or contact violators.

1. Type of violation (e.g. approach, harassment, other)
2. Date
3. Time
4. Location of violation
5. Type of vessel/equipment used in violation
    - Color(s)
    - Length
    - Name/home port
    - Identification numbers
    - Other descriptions
    - Last known direction headed
    - Speed
6. Weather on scene
7. Visibility
8. Sea conditions
9. Behavior of animals prior to, during, and after incident
10. Photographs/video taken or available
11. Description of violation or comments
12. Reporting party's name
13. Temporary address & telephone number of reporting party if non-resident
14. Permanent address & telephone number
15. Other witnesses
16. Signature and date

CONTACT INFORMATION

For Reporting Violations, Strandings, or Other Incidents

To Report Marine Mammal Violations:
NOAA Fisheries Enforcement Hotline: (808) 541-2727 or 1-800-853-1964

U.S. Coast Guard: 1-800-552-6458

Hawai'i Division of Conservation and Resources Enforcement (DOCARE)
O'AHU: (808) 587-0077
HILO: (808) 974-6208
KAMUELA: (808) 887-6196
KONA: (808) 323-3141
KAUA'I: (808) 274-3521
LĀNA'I: (808) 565-7916
MAUI: (808) 984-8110
MOLOKA'I: (808) 553-5190
AFTER HOURS: Dial "0" and ask for enterprise 5469

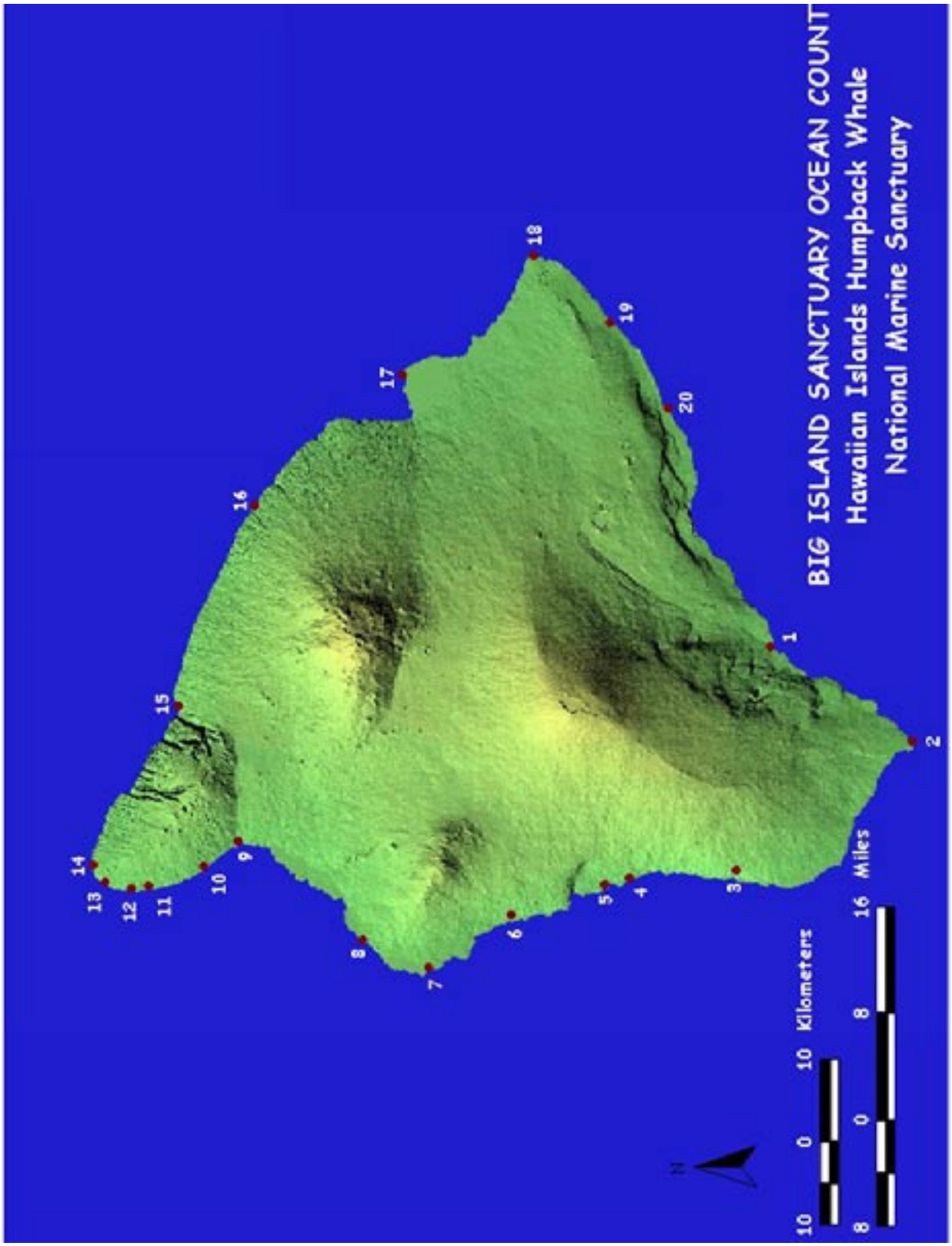
To Report Marine Mammal Entanglements or Strandings (Whales, Dolphins & Seals):
NOAA Fisheries Hotline: 1-888-256-9840

Police Department
HONOLULU : 911
HAWAI'I: (808) 935-3311
KAUA'I: (808) 241-6711
MAUI: (808) 244-6400

To Report Injured or Stranded Sea Turtles:
NOAA Fisheries, Marine Turtle Research Program: (808) 983-5730

Hawai'i Division of Conservation and Resources Enforcement (DOCARE): See above.

SANCTUARY OCEAN COUNT



BIG ISLAND SITE DESCRIPTIONS

SOUTH SHORE LOCATIONS

Site 1: Punaluʻu Black Sand Beach Park

Directions: Site is located off Highway 11 (Māmalahoa Highway) near Punaluʻu, just after mile marker 56. A road sign marks the site. Follow the paved road approximately 1 mile to the coast. Road ends in the parking lot.
Parking: Adequate parking is available.
Facilities: Public restrooms, phones, drinking water and shade are available. Handicapped accessible.
Elevation: 0-20 feet
Comments: Beautiful location. Easily accessible.
Bathymetry: The shoreline at this site is composed of sea cliffs, 3-10 m above sea level. Offshore submarine bottoms are composed of basalt pavement or consolidated rock bottom or outcrops, as well as some massive boulders. The bottom drops off to approximately 15-75 ft. at a distance of 50 m offshore.

Site 2: Ka Lae Park

Directions: Turn off Highway 11 (Māmalahoa Highway) onto South Point Rd. and proceed to the end. Follow the rough dirt road through the hole in the wall. Park down the hill where the ground levels off.
Parking: Parking is available at the end of the dirt road. Not handicapped accessible.
Facilities: No public facilities available.
Elevation: 20 feet
Comments: Ka Lae is the southernmost point in the U.S. It is visited by many tourists and local fishermen.
Bathymetry: The shoreline at this site is composed of sea cliffs, 3-10 m above sea level. Offshore submarine bottoms are composed of basalt pavement or consolidated rock bottom or outcrops, as well as some massive boulders. The bottom drops off to approximately 15-75 ft. at a distance of 50 m offshore.

Site 3: Miloliʻi Lookout

Directions: Site is located on a side road off Highway 11 (Māmalahoa Highway). Look for a sign at the top of the road reading "Miloliʻi Beach Park". A small lookout area is located approximately 1.9 miles down the paved one-lane road on the right.
Parking: Adequate parking available.
Facilities: No public facilities available.
Elevation: 800 feet
Comments: No information available.
Bathymetry: The shoreline at this site is composed of very low outcrops, abrasion ramps, benches and is approximately at sea level. Offshore submarine bottoms are composed of basalt pavement with massive boulders, cobbles, basalt or limestone rubble, and small boulders. The bottom drops off to approximately 30-50 ft. at a distance of 100 m offshore.

KONA LOCATIONS

Site 4: Hoʻokena Beach Park

Directions: Site is located at the end of Hoʻokena Beach Road off Highway 11 (Māmalahoa Highway). Road is between mile markers 101 and 102. Take the Oceanside turnoff and proceed approximately 2 miles to the beach parking lot.
Parking: Adequate, safe parking available.
Facilities: Public restrooms and pavilions that offer shade are available. Handicapped accessible. No phone or drinking water available.
Elevation: 20 feet
Comments: Hoʻokena Beach Park is a popular swimming area.
Bathymetry: The shoreline at this site is composed of a dark sand beach. Offshore submarine bottoms are composed of cobbles (basalt and limestone), small boulders, and non-consolidated rubble. The bottom drops off to approximately 10-20 ft. at a distance of 100 m offshore.

Site 5: Hōnaunau

Directions: Site is located at the scenic overlook off Hōnaunau Road overlooking Puʻuhonua. Take Māmalahoa Highway to the turnoff for Hōnaunau Historic National Park Road (near mile marker 104). Approximately 3 miles off of the highway at the City of Refuge exit.
Parking: Park at the scenic lookout about 1/4 mile above the National Park entrance. Parking available for 8-10 cars.
Facilities: No drinking water, restrooms, public phones, or shade are available. Handicapped accessible.
Elevation: 20-40 feet
Comments: Good vantage point. A ridge to the south prevents nearshore observations. Binoculars are needed.
Bathymetry: The shoreline at this site is composed of very low outcrops, abrasion ramps, benches and is approximately at sea level. Offshore submarine bottoms are composed of cobbles (basalt and limestone), small boulders, and non-consolidated rubble. The bottom drops off to approximately 60 ft. at a distance of 300 m offshore.

Site 6: Keauhou Scenic Lookout

Directions: Site is located at the Scenic Lookout in Keauhou (or just past that at the Wendy's restaurant off King Kamehameha Road). Turn downhill (makai - toward ocean) from Highway 11 onto King Kamehameha III Road; a 2-lane paved road just off the main road.
Parking: Adequate and safe parking is available for approximately six cars.
Facilities: Public facilities available inside Wendy's or at nearby Keahou Shopping Center.
Elevation: ~450 feet
Comments: The ʻŌhiʻa Cave Historic Preserve is just below the observation point.
Bathymetry: The shoreline at this site is composed of boulders and talus at the base of cliffs. Offshore submarine bottoms are composed of cobbles (basalt and limestone), small boulders, and non-consolidated rubble. The bottom drops off to approximately 60 ft. at a distance of 550 m offshore.

Site 7: Keāhole Point (NELHA)

Directions: Take Queen Ka'ahumanu Highway 19 to the Natural Energy Lab Road (just south of Keāhole Airport). Take this road to the end. Turn left onto the dirt access road at the chain link fence. The beach is a little way down the road. Park at the lighthouse.
Parking: Adequate and safe parking is available.
Facilities: Limited public facilities are available. Not handicapped accessible.
Elevation: 20 feet
Comments: No information available.
Bathymetry: The shoreline at this site is composed of very low outcrops, abrasion ramps, benches and is approximately at sea level. Offshore submarine bottoms are composed of pavement with massive basalt boulders and patchy sand cover. The bottom drops off to approximately 180 ft. at a distance of 260 m offshore.

Site 8: Hualālai (Four Seasons Resort)

Directions: Site located between Kona Coast State Park/Cinder Cone and Hualālai Resort. For public beach access, follow the path fronting the resort, following signs to the resort. The site leader will choose the exact location.
Parking: Safe, adequate public access parking is available.
Facilities: Restrooms, phones, drinking water and showers available. Minimal shade available. Handicapped accessible.
Elevation: 0-20 feet
Comments: Beautiful site. Site leader will need to contact the Security chief of the resort several weeks prior to the event.
Bathymetry: The shoreline at this site is composed of very low outcrops, abrasion ramps, benches and is approximately at sea level. Offshore submarine bottoms are composed of coral and large sand channels, as well as limestone and loose sand. The bottom drops off to approximately 10-20 ft. at a distance of 450 m offshore.

KOHALA LOCATIONS

Site 9: Pu`ukoholā Heiau National Park

Directions: From Kona - Take Highway 19 north past Waikoloa/Hāpuna and Spencer Park. Turn left at Highway 270, proceed 1/2 mile and turn left into Pu`ukoholā National Park. From Waimea - Take Highway 19 south to Highway 270, turn right or north on 270, proceed 1/2 mile north and turn left into park. You'll see the National Park sign on the highway – easy to find. Paved road. Turn right into paved parking area.
Parking: Parking is available.
Facilities: Shade, public restrooms (portable), public telephones and water are available. Additional facilities can be found at the Kawaihae 7-11 store, approximately 15 minutes away.
Elevation: 120 feet
Comments: Park opens at 7:30a.m. A special use permit is required to use the park. Sanctuary office will take care of obtaining permit.
Bathymetry: The shoreline at this site is composed of very low outcrops, abrasion ramps, benches and is approximately at sea level. Offshore submarine bottoms are composed of coral and large sand channels. The bottom drops off to approximately 60 ft. at a distance of 1000 m offshore.

Site 10: Mile Marker 7

Directions: Site is located off Highway 270 near Kawaihae. The Count is conducted from the slope just off the shoulder of the road. Take Highway 19N to Kawaihae Road (Highway 270) just past Kawaihae Harbor. Look for Mile Marker 7, just past Kohala Ranch.
Parking: Parking is available on the shoulder.
Facilities: No shade or public facilities are available at the site. Facilities can be found at the Kawaihae 7-11 store, approximately 15 minutes away.
Elevation: ~180 feet
Comments: Excellent viewing site. This site is used for research throughout the year.
Bathymetry: The shoreline at this site is composed of outcrops 1 m-3 m above sea level. Offshore submarine bottoms are composed of submerged rocks, extensive lava flow fingers, reef, and rubble deposits. The bottom drops off to approximately 30 ft. at a distance of 330 m offshore.

Site 11: Lapakahi State Historical Park

Directions: Take Highway 270 north of Kawaihae at mile marker 14. Site is located 100 yards past the gate at the top of the hill. Approximately 1/2 mile from shore. Look for the sign on roadway.
Parking: Parking available.
Facilities: Restrooms are available however no shade or phone available. Not handicapped accessible.
Elevation: 40 feet
Comments: Lapakahi is a cultural and historical state park. It gets hot, bring an umbrella. A special use permit is required to use the park. Sanctuary office will take care of obtaining permit.
Bathymetry: The shoreline at this site is composed of sea cliffs, 3-10 m above sea level. Offshore submarine bottoms are composed of pavement or consolidated rock bottom or outcrops. The bottom drops off to approximately 60 ft. at a distance of 150 m offshore.

Site 12: Kapa'a Beach Park

Directions: Site is located off of Highway 270 (Pule Highway). Traveling north, turn left on the one-lane paved road just past mile marker 16. Site is located at the end of the road.
Parking: Adequate parking is available for approximately 10 cars.
Facilities: Public restrooms (portable) and shaded areas are available. Handicapped accessible.
Elevation: ~20 feet
Comments: Great site for count. Covered picnic pavilions are available. Hiking trails lead off the site.
Bathymetry: No information available

Site 13: Old Coast Guard Road

Directions: Traveling north on 270, turn left after Puakea Bay. A white rail fence is visible at the turn. Site is located at the end of the road. The site is approximately 2.5 miles from Hāwī and 19 miles from Kawaihae.
Parking: Parking is available for approximately 8 cars.
Facilities: No restrooms or shade available. Not handicapped accessible.
Elevation: 20-40 feet
Comments: Excellent site for whale watching.
Bathymetry: No information available.

Site 14: ʻUpolu Point

Directions: Site is located at the overlook near ʻUpolu Point Airport in Kohala.
From Kohala: South on Highway 270, turn right at the ʻUpolu Airport sign.
From Waimea - Take Mountain Road to Hāwī, turn left onto Highway 270, turn right at the ʻUpolu Airport sign.
From Kona/Waikoloa: North of Kawaihae on Highway 270 to mile marker 20. Turn right at the ʻUpolu Airport sign.
Parking: Parking is available at the airport.
Facilities: No public facilities are available.
Elevation: 40 feet
Comments: Excellent whale watching site. The airport fence is locked on weekends, but parking is still available. 4WD vehicles can drive on the dirt road around the air strip to get better access to the site.
Bathymetry: No information available.

HĀMĀKUA COAST LOCATIONS

Site 15: Waipiʻo Valley Lookout

Directions: Turn off Highway 19 towards Honokaʻa. Follow the road to the Waipiʻo Valley Lookout. Walk down the path to the lookout area near the pavilion.
Parking: Adequate parking is for approximately 7 cars.
Facilities: Public restrooms, pavilion and shaded areas are available. Handicapped accessible.
Elevation: 880 feet
Comments: Excellent visibility. Beautiful site.
Bathymetry: No information available.

Site 16: Laupāhoehoe Scenic Lookout

Directions: Site is located approximately 23 miles NW of Hilo and 15 miles E of Honoka`a on Hāmākua Coast Highway 19. Approximately a 25 minute drive from Hilo. The lookout is just off the main highway.
Parking: Parking is available for approximately 7-8 cars.
Facilities: Phones available. Handicap accessible.
Elevation: 400 feet
Comments: The Island of Maui is visible to the north.
Bathymetry: No information available.

Site 17: Onekahakaha Beach Park (Hilo Bay)

Directions: Located at a public beach park, approximately 5-10 minutes from downtown Hilo. Take King Kamehameha Road past Banyan Drive to Kanoelehua Street. Continue on Kalanianaʻole Street, approximately 4 miles along coast. Turn left towards beach. Park, then follow parking lot to the right.
Parking: Parking available.
Facilities: Public restrooms, pavilion, phones, drinking water and picnic tables are available. Handicapped accessible.
Elevation: 0 feet
Comments: Pavillion could be rented in advance in case of rain.
Bathymetry: No information available.

Site 18: Kumukahi Lighthouse

Directions: Take Route 132 to Kapoho. At the stop sign, proceed straight on gravel road to lighthouse. Walk to safe viewing spot.
Parking: Adequate parking is available for approximately 10 cars.
Facilities: No public facilities or shade are available. Not handicapped accessible.
Elevation: 40 feet
Comments: Rocky area with good visibility.
Bathymetry: No information available.

Site 19: Kehena Lookout

Directions: Take Kea'au-Pāhoa Road (130) south. Turn left onto Highway 137 at Kalapana. Kehena is located at Mile Marker 19.
Parking: Adequate, safe and free parking.
Facilities: No public facilities are available. Minimal shade is available. Not handicapped accessible.
Elevation: 60 feet
Comments: This site has a nice shaded area available. It is near Kehena Estates. Approximately 6-8 people maximum.
Bathymetry: No information available.

Site 20: Ka'ena Point (Chain of Craters Road)

Directions: Enter Volcanoes National Park. Take the first left and follow the signs for Chain of Craters Road. Proceed to the end of the road. Site is located 100 yards from the main road, over lava rock field.
Parking: Adequate parking is available.
Facilities: Public restrooms are available 5 minutes away. No other public facilities are available. Not handicapped accessible.
Elevation: 30 - 40 feet
Comments: Bluff looking southeast, 180 degree view. Can get very hot, be prepared.
Bathymetry: No information available.

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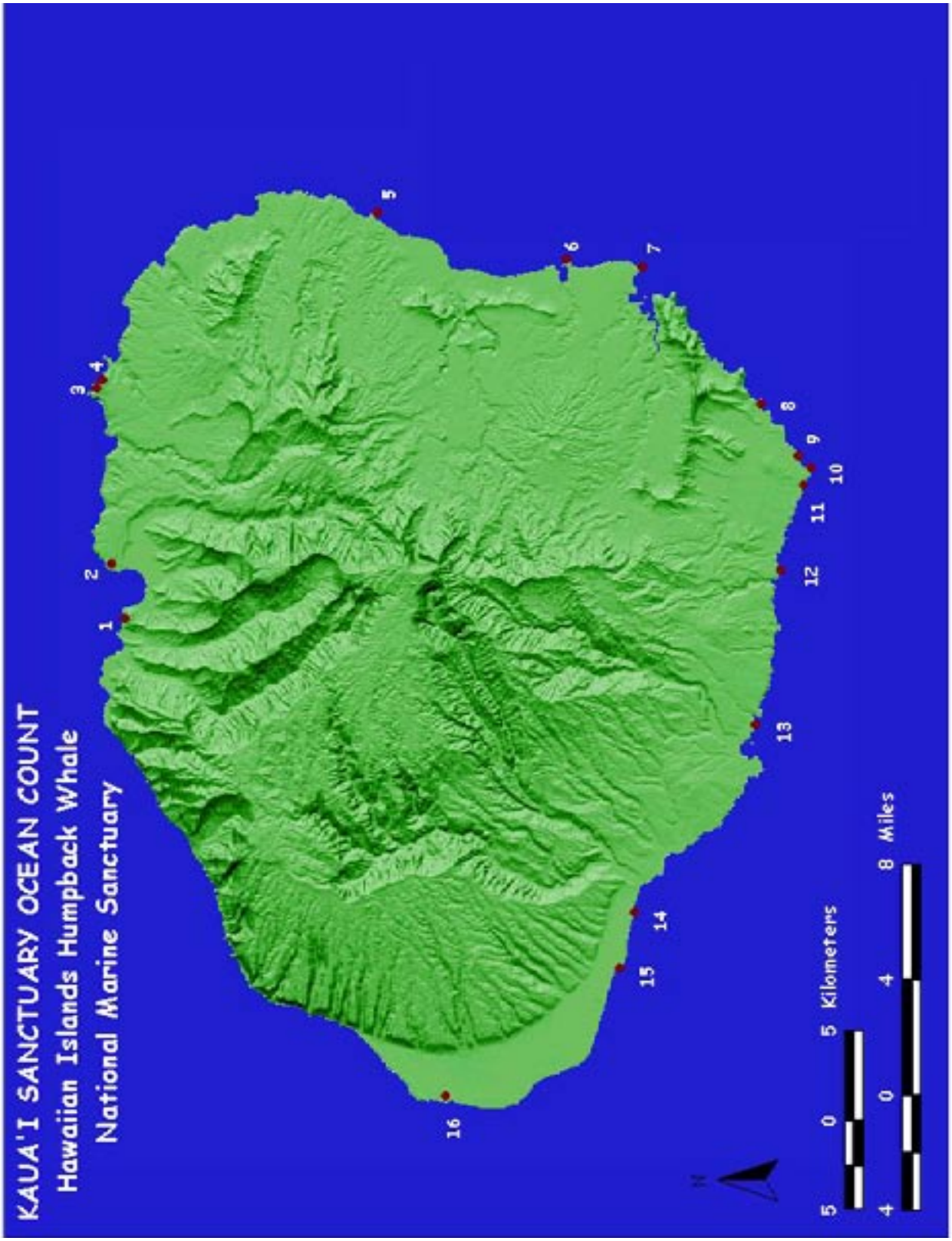
SANCTUARY OCEAN COUNT



KAUA`I SITE DESCRIPTIONS

NORTHSHORE LOCATIONS

Site 1: Lumahaʻi Lookout

Directions: On Kūhiō Highway overlooking Lumahaʻi Beach. The highway pull-off has an emergency call box.
Parking: Parking is available along Kūhiō Highway.
Facilities: No restrooms or water available.
Elevation: 120 feet
Comments: The ocean count will be conducted from a vantage point along Kūhiō Highway, overlooking Lumahaʻi Beach. Volunteers should obey all signs, including not stepping beyond the guardrails. Due to traffic congestion at this site, do not bring lawn chairs. Volunteers should limit cars to three only. The other cars should be parked further down the coast where parking is safer and more abundant. Permission to use this property has been granted by the Highways Division.
Bathymetry: The bottom drops off to 50 feet about 2.2 nautical miles from the shoreline; the bottom drops off to100 feet about 2.8 nautical miles from the shoreline. The nearshore bottom is mostly consolidated reef with some sediment. Offshore, the bottom is sand. This site is located near Hanalei Bay, however views do not include the bay.

Site 2: Princeville Hotel

Directions: Meet on hotel lawn fronting the gazebo near the parking area.
Parking: A public parking lot is located adjacent to hotel parking lot.
Facilities: Restrooms available in the hotel.
Elevation: 120 feet
Comments: This site is on the grounds of the Princeville Hotel. It is on a high cliff with a panoramic (270 degrees) view of Hanalei Bay and waters fronting the Princeville area. Permission to use this property has been granted by the Princeville Hotel.
Bathymetry: This vantage point is located on a cliffed coastline near Hanalei Bay. On both sides of the vantage point, there are coral reefs. The bottom drops off to 50 feet within 1.5 miles of the shoreline and to 100 feet within 1.7 miles of the shoreline. The nearshore bottom is consolidated limestone. Offshore, the bottom is sand.

Site 3: Kīlauea Point National Wildlife Refuge

Directions: Meet at the gated entrance to the Kīlauea Point National Wildlife Refuge by 7:15 am. The site leader will get the volunteers through the gated entrance, since the refuge does not open to the public until 10 am. All cars will be allowed to drive through the gate and park in the public parking lot. Volunteers will walk out to the point and set up an observation area.
Parking: Public parking is available at the refuge.
Facilities: Restrooms are available in the refuge visitor center.
Elevation: 180 feet
Comments: The height of the coastal vegetation at this site will require volunteers to stand, rather than sit, while making observations. Lawn chairs may be used during rest periods. Several volunteers should be designated as interpreters since many visitors to the

refuge will want to know about the activity. No pets are allowed. This is a wildlife refuge where human food consumption is strictly limited because of the potential for ants, rats, and feeding native wildlife. Food is to be consumed in cars only, but water is allowed on site. Permission to use this site has been granted by the U.S. Fish and Wildlife Service.

Bathymetry: The areas observable from this location have bottoms that drop off to 50 feet within 0.3 miles of the shoreline and drop off to 100 feet within 0.6 miles of the shoreline. The nearshore bottom is a hard bottom, normally basalt with a thin veneer of marine life; not reefal or sedimentary.

Site 4: Kīlauea Point National Wildlife Refuge-Crater Hill East

Directions: Meet at the gated entrance to Seacliff Plantation along Kîlauea Road by 7:15 am. The site leader will get the volunteers through the gated entrance. All cars will be allowed to drive to the paved turnaround area at the Seacliff Plantation Overlook. Volunteers will walk through fencing, over the hill to a vantage point looking northeast to Mōkōlea Point. Volunteers will walk about 10 minutes uphill and downhill along a grassy trail from their parked cars.

Parking: Parking is available off the Seacliff Plantation roadway.

Facilities: No restrooms or water available. Nearest restrooms are at the Kīlauea Point National Wildlife Refuge visitor center.

Elevation: 250 feet

Comments: No pets are allowed. This is a wildlife refuge where human food consumption is strictly limited because of the potential for ants, rats, and feeding native wildlife. Food is to be consumed in cars only, but water is allowed on site. Bring lawn chairs if you don't want to sit on the grass. Since some walking is involved, large coolers are not recommended. This vantage point is located on a steep ocean cliff. This site is not recommended for persons fearful of heights. Excellent site for seabird watching. Permission to use this site has been granted by the U.S. Fish and Wildlife Service.

Bathymetry: The bottom drops off to 50 feet within 1.3 nautical miles from the shoreline and to 100 feet within 1.8 nautical miles of the shoreline. The nearshore bottom is a hard bottomtype. Further offshore, the bottom is smooth limestone.

EASTSIDE LOCATIONS

Site 5: Kapa'a Lookout

Directions: This is the paved pull-off along Kūhiō Highway located between Kapa'a town and Keālia Beach.

Parking: Parking is available at the lookout.

Facilities: No restrooms or water available.

Elevation: 40 feet

Comments: Lawn chairs are suggested. Excellent view of the Kapa'a reef. Permission has been granted by the State Highways Division.

Bathymetry: This vantage point is along a rocky shoreline. This vantage point is adjacent to a large reef flat. The bottom drops off to 50 feet within 1.4 nautical miles of the shoreline and to 100 feet within 1.6 miles of the shoreline. The nearshore bottom is sandy and becomes rocky further offshore.

Site 6: Ahukini State Recreation Pier

Directions: The park is located at the end of Ahukini Road past the airport in Līhu'e.
Parking: Parking is available at the park. Park cars as instructed by the site leader.
Facilities: No restrooms or water available.
Elevation: 0 feet
Comments: Lawn chairs are suggested. Sweeping views of the bay and ocean. A special use permit has been issued by the Division of State Parks.
Bathymetry: This rocky basalt shoreline is at the entrance to Hanamā'ulu Bay. The bottom drops off to 50 feet 1 nautical mile from the shoreline; the bottom drops off to 100 feet within 1.2 nautical miles from the shoreline. The bottom is mostly consolidated reef with some sediment bottom.

Site 7: Ninini Lighthouse

Directions: Enter at the guard shack along Kapule Highway across from Vidinha Stadium in Līhu'e. Follow the winding road that ends at Ninini Lighthouse.
Parking: Parking is available at Ninini Lighthouse.
Facilities: No restrooms or water available.
Elevation: No information available.
Comments: The roadway becomes narrow and unpaved in the section closest to the lighthouse. A picnic table is available. Bring lawn chairs if you do not want to sit on the rocky shoreline. The ocean count will be conducted on the ground, not on top of the lighthouse.
Bathymetry: This rocky shoreline is at the entrance to Nāwiliwili Harbor, the main commercial port for the island of Kaua'i. The bottom drops off to 50 feet within 1.2 nautical miles of the shoreline; bottom drops off to 100 feet within 1.4 nautical miles of the shoreline. The bottom is composed of sand and coral.

SOUTHSHORE LOCATIONS

Site 8: Māhā'ulepū-Ha'ula

Directions: Meet at 7:15 am at the guard shack at the entrance to Māhā'ulepu. The volunteers will be escorted to the selected ocean count site by the site leader. This site is located adjacent to Ha'ula Bay.
Parking: Parking is available at the end of the road, near the ocean count site.
Facilities: No restrooms or water available.
Elevation: ~25 feet
Comments: This site is located at the far (Līhu'e-side) end of Māhā'ulepu. This is a wildland location. The roadways are unpaved and bumpy. Lawn chairs are suggested for those who do not want to sit on the ground. Permission from Grove Farm has been obtained.
Bathymetry: This vantage point is located on a limestone cliff. The bottom drops off to 50 feet within 0.3 miles of the shoreline and to 100 feet within 1 mile of the shoreline. The nearshore bottom is beach rock and consolidated reef with some sediment on the bottom. Offshore the bottom is sand.

Site 9: Māhāʻulepū-Makawehi

Directions: This is the high bluff located just past the Hyatt Regency. Drive along Poʻipū Road, beyond the entrance to the Hyatt Regency Kauaʻi Resort and Spa. Turn right onto Ainako Street and proceed to the public parking area behind the beach. Walk eastward along the beach to the raised lithified dunes nearby. Climb to the top.

Parking: Parking is available at the end of Ainako Street in a paved parking lot that is part of a public beach access.

Facilities: Public restrooms and drinking fountains are available at the public parking lot/beach access.

Elevation: 40 feet

Comments: This site is located in the Māhāʻulepu area, adjacent to the Hyatt Regency Kauaʻi Resort. This is a wildland location. Physical exertion is required to get to this site. This site is not recommended for anyone with a fear of heights and who is not steady on their feet. Since climbing to the top of the lithified dune will be required, lawn chairs are not recommended. Permission from Grove Farm has been obtained.

Bathymetry: This vantage point is located on a lithified dune. The bottom drops off to 50 feet within 0.2 miles of the shoreline. The nearshore bottom is a hard bottom type normally basalt with a thin veer of marine life, not reefal or sedimentary. This extends offshore and also may include a hard bottom with sediments that cover up to fifty percent of the area.

Site 10: Makahūʻena Point

Directions: This site is located on Peʻe Road in Poʻipū. This is the undeveloped oceanfront property next to the Makahūʻena condominium. There is a Coast Guard light on the property. The ocean count site is at the base of the Coast Guard light.

Parking: Parking is available along Peʻe Road.

Facilities: No restrooms or water available.

Elevation: 30 feet

Comments: This is the southeastern tip of the island. Lawn chairs are suggested for those who do not want to sit on the ground. Permission from the Coast Guard has been obtained.

Bathymetry: The vantage point is located on a cliffed shoreline. The bottom drops off to 50 feet feet within 0.7 miles of the shoreline and to 100 feet within 1.0 miles of the shoreline. The nearshore bottom is a hard bottom type.

Site 11: Poʻipū Beach Park

Directions: Poʻipū Beach Park is a county beach park located at the intersection of Hoʻowili Road and Hoʻone Road. The ocean count site is located near the shoreline, near the start of the breakwater that protects keiki pond, under the ironwood trees.

Parking: Parking is available in the public parking lots across the street.

Facilities: Public restrooms and drinking fountains are available at the park.

Elevation: 0-10 feet

Comments: This is a shady site on level lawn that can be easily accessed by those who have difficulty walking or need wheelchairs. Picnic tables may be available nearby, but lawn chairs are suggested. Lifeguards are on duty at Poʻipū Beach.

Bathymetry: The bottom drops off to 50 feet within 0.3 miles of the shoreline and to 100 feet within 0.5 miles of the shoreline. The nearshore bottom is a hard bottom with sediment on fifty percent of the area. Offshore, the bottom is sand.

Site 12: Kaʻiwa Point

Directions: Drive westward on Lāwaʻi Road, past Spouting Horn in Poʻipū. The trail to the ocean count site is located just east of the Lāwaʻi Gardens gate. Proceed down the trail to about mid-level with a good view, as determined by the site leader. If ocean conditions are too rough (excess salt spray and wave wash), conduct the count from the side of the Lāwaʻi Road where the vegetation has been cleared, as determined by the site leader.

Parking: Park along the edge of the Lāwaʻi Road, making sure not to block the turnaround and entrance to Lāwaʻi Gardens.

Facilities: No public restrooms or water available. The nearest facilities are located at Spouting Horn.

Elevation: 40-50 feet

Comments: This site will involve walking a short distance down a sloping, dirt path to a vantage point with sweeping views of the southern shoreline and Lāwaʻi Bay. Caution should be taken in not getting swept by waves and salt spray.

Bathymetry: This vantage point is located on a volcanic coastline. The bottom drops off to 50 feet within 0.2 miles from the shoreline and to 100 feet within 0.4 miles of the shoreline. The nearshore bottom is a hard bottom type. This bottom type extends father offshore. There is also consolidated reef with some sediment bottom.

WESTSIDE LOCATIONS

Site 13: Port Allen Cemetery

Directions: Drive to the power plant in the Port Allen industrial area in ʻEleʻele and take the dirt road that leads eastward to Glass Beach; continue eastward to the cemetery.

Parking: Parking is available at the ocean count site.

Facilities: No restrooms or water available. Nearest facilities are located at Port Allen Small Boat Harbor.

Elevation: 30 feet

Comments: Access to the site is by dirt road. Lawn chairs are suggested. Permission from A&B Properties has been obtained. Volunteers will be required to fill out an A&B right-of entry permit agreement at the volunteer training session (questions: call sanctuary staff at 246-2860).

Bathymetry: The vantage point is located at the top of a cliffed coastline. The shoreline contains basalt tide pools. It is located near an electric plant and discharge area, breakwater, and commercial port. The lands nearby were used as a dumping ground. The bottom drops off to 50 feet within 1.3 nautical miles of the shoreline and to 100 feet within 1.5 nautical miles of the shoreline. The nearshore bottom is a hard bottom type. There is coral offshore.

Site 14: Waimea Canyon Drive

Directions: Along Waimea Canyon Dr. above the town of Waimea, near the pull-off with interpretive sign.
Parking: Parking is available off of Waimea Canyon Drive.
Facilities: No restrooms or water available.
Elevation: 200 feet
Comments: This is not a shorefront location, however it offers a panoramic view of the ocean fronting Waimea. Because of its inland location, strong binoculars are recommended. Lawn chairs are suggested. Volunteers may be required to fill out a Department of Water Supply liability waiver form.
Bathymetry: The bottom drops off to 50 feet within 1.7 miles of the shoreline and to 100 feet within 1.8 miles of the shoreline. The shoreline is sand. The nearshore bottom is mostly sand with some rocky features.

Site 15: St. Theresa School

Directions: On Kaumualiʻi Highway, along the shoreline fronting St. Theresa School in Kekaha.
Parking: Parking is available off of Kaumualiʻi Highway.
Facilities: No restrooms or water available.
Elevation: 0-10 feet
Comments: No information available.
Bathymetry: The shoreline is a gently sloping sand beach. This location has a bottom that drops off to 50 feet within 0.8 miles of the shoreline; drops off to 100 feet within 1 mile of the shoreline; and drops off to 600 feet within 1.6 miles of the shoreline. The nearshore bottom is sand, consolidated reef, and consolidated smooth limestone pavement. Consolidated reef and consolidated limestone extend into the deeper waters.

Site 16: Pacific Missile Range Facility (PMRF)

Directions: Due to security restrictions at the base, this site is available only to those volunteers who work on the base. The site is on the eastern side of Nohili Ditch, at the base of an airfield approach marker.
Parking: Parking instructions will be given by the site leader.
Facilities: No restrooms or water available.
Elevation: ~15 feet
Comments: Permission to use this site has been granted by the Pacific Missile Range Facility.
Bathymetry: This vantage point is located on a low sand and limestone shoreline. The bottom drops off to 50 feet within 1.8 miles of the shoreline and to 100 feet within 2.1 miles of the shoreline. The nearshore bottom is consolidated limestone; sand predominates in depressions slightly further out. Offshore, the bottom is sand.

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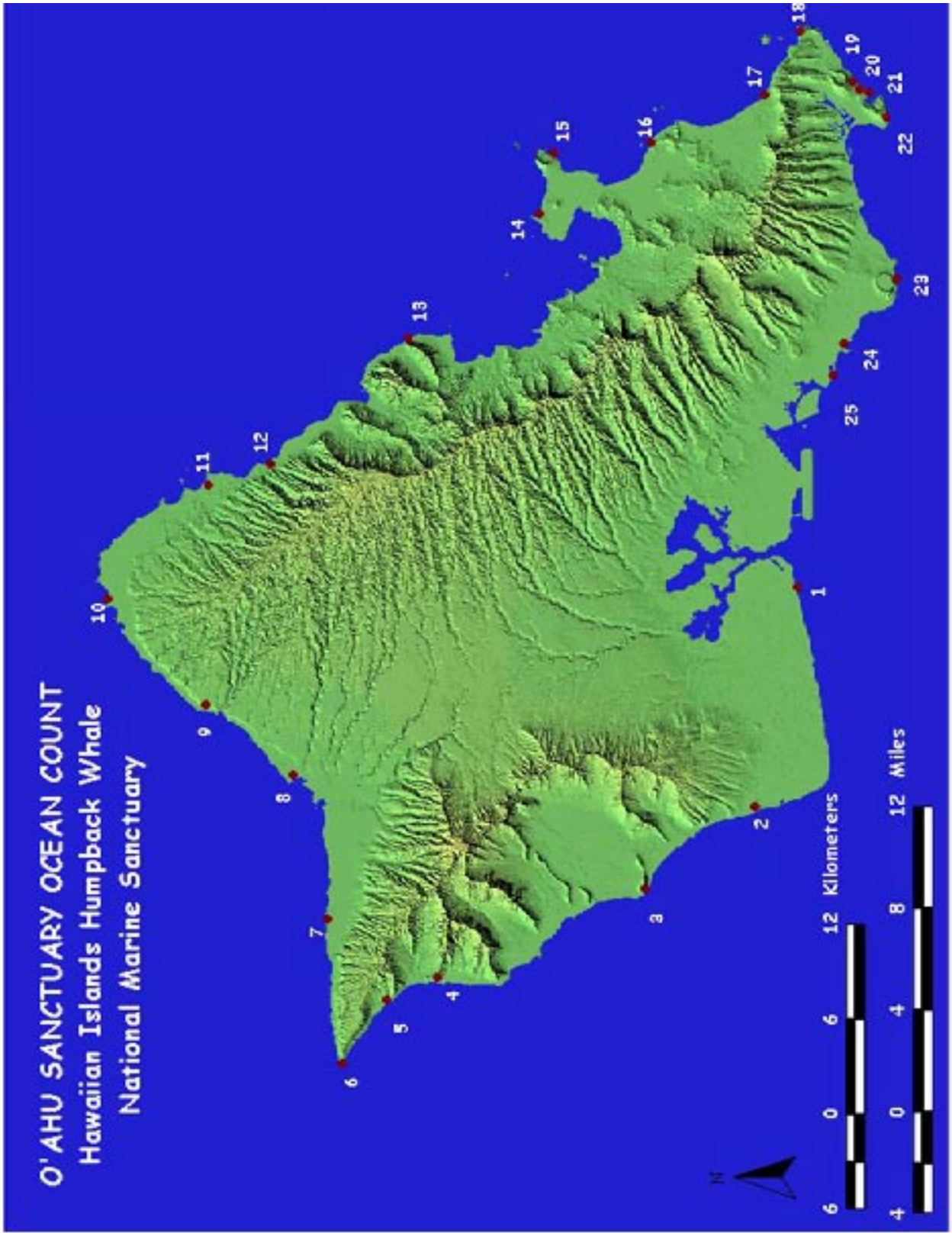
SANCTUARY OCEAN COUNT



O`AHU SITE DESCRIPTIONS

LEEWARD LOCATIONS

Site 1: ‘Ewa Beach Park

Directions: Take H1 to Exit 5A, ‘Ewa Beach (Fort Weaver Road), and continue on the main road through the business and residential areas. The ‘Ewa Beach site is located directly across from the ‘Ewa Beach Golf Club. The beach site is located approximately 200 yards away
from the road. Pu’uloa Rifle Range is at the end of the road.

Parking: Safe parking lot is available with approximately 50-60 stalls. Look for white cement markers around the parking area.

Facilities: Public restrooms, drinking water,phones and covered picnic areas are available. Little shade is available.Handicap accessible.

Elevation: 0-20 feet

Comments: The site is at sea level which may affect visibility. Binoculars are recommended.

Bathymetry: The site’s coastal water falls within a restricted zone of the US Navy, Pearl Harbor. The land is very flat. This site allows for a great view of the coastal area due to its shallow waters that extend 3,750 yards from shore. The shallow reef bottom is a combination of hard and soft bottoms with sand and limestone outcrops and boulders. Coastal waters are very shallow with a depth of 2 fathoms stretching 1 mile seaward.

Site 2: Ko ‘Olina

Directions: Take H1 West towards Wai‘anae. Go past the Makakilo/Barbers Point exit. H1 will turn into Farrington Highway. Turn off at the Ko ‘Olina exit and head towards the hotel. Paradise Cove will be on your right. Stop at the first guard station, tell them you are going to the public beach. Site is usually located at the first lagoon. There is a short 5 minute walk to the site area.

Parking: Safe parking is available at the lagoon.

Facilities: Public restrooms, telephones, drinking water and shaded areas are available. Handicapped accessibility may be possible.

Elevation: 10-40 feet

Comments: Good viewing site. A special use permit is required to use the park. Sanctuary office will take care of obtaining permit.

Bathymetry: The shallow reef (3 fathoms) includes a complex reef bottom with a mixture of limestone boulders and outcrops, as well as hard bottom and rubble. Further offshore, at approximately 3-10 fathoms, the bottom is consolidated, grooved limestone with sand in the grooves. Ocean bottom is soft with a strip of limestone sand bottom extending about 875 feet parallel to the shoreline.

Site 3: Māʻili Point

Directions: Head towards Māʻili Point between Hakimo Road and Kaukama Street. Turn right at the Board of Water Supply and approach a closed gate for the Civil Defense. Proceed up the hill. Site is located at the bunkers (tunnel).
Parking: No parking on higway. Parking available at Civil Defense.
Facilities: Public restrooms and partial shade are available. Drinking water and public telephones are not available. Not handicapped accessible.
Elevation: ~100 feet
Comments: Site accessed by a paved road. Beautiful location with restricted access.Site can get a little windy; dress accordingly. Great viewing area.
Bathymetry: The surveying site is located on state land. There is a rocky coral reef area extending about 50 yards nearshore. This rocky coral reef area is occasionally uncovered depending on wave action. There are at least 10 large rocks in the water near the coast located in less than 2 fathoms that are also uncovered depending on wave action. Nearshore ocean bottom is hard basaltic bottom. The bottom becomes consolidated limestone with some reef slope areas further away from shore with depths starting at 3 fathoms.

Site 4: Mākua Cave

Directions: Follow Farrington Highway past Mākua Beach Park. Mākua Cave is located approximately 2 miles up the road.
Parking: An unpaved parking lot is located right off the road on the makai (ocean) side.
Facilities: No public facilities available. Handicapped accessible. Shade available.
Elevation: 10-20 feet
Comments: Convenient access to site. There are no trash cans. Please bring plastic bags for trash.
Bathymetry: The vantage point is located on state land. The shoreline is mostly limestone with low-lying outcrops. Nearshore and offshore bottoms are mostly hard bottom and include two independent shallow reef sand bottoms west of the Mākua Cave. The hard bottom encompasses very little ocean floor beyond 10 fathoms and 0.6 miles from the site.

Site 5: Kaʻena Point (West Shore)

Directions: Take H1 west to Farrington Highway to the end.
Parking: Parking is available near restrooms.
Facilities: Public facilities and drinking water are available at the site. Shade and phones are not available.
Elevation: ~40 feet
Comments: Count is conducted from the parking lot at the end of the road.
Bathymetry: This site includes the Kaʻena Point Natural Area Reserve. The ocean bottom here consists mainly of hard bottom with very few patches of sand pockets both found as deep as 10 fathoms and as far out as 0.3 miles from shore.

Site 6: Ka‘ena Point (North Shore)

Directions: Take H1 west towards Wai‘anae then connect to H2 North Wahiawa/Schofield. Continue straight (Schofield-bound) and eventually the freeway will slope down, merging onto a road (99 North). With Schofield Barracks on your left, proceed toward Wai‘alua. At the fork in the road, stay left heading toward Mokulēi‘a. At the end of the road, look for a large sign “Point Light House, U.S.Coast Guard, Natural Area Reserve (NAR)".

Parking: Parking is available in the lot just before the red and white gate. For those with 4WD vehicles, you can loop past the gate onto Ka‘ena Point Road (unpaved) and park closer to the shore.

Facilities: No public facilities are available.

Elevation: ~20 feet

Comments: Site access requires an easy 3-mile hike from the paved road.

Bathymetry: The vantage point here is located on the Ka`ena Military Reservation. The coastal bottom is abundant in limestone with random areas of reef slopes. Approximately 375 feet offshore, the bottom drops off from 2 to10 fathoms.

NORTH SHORE LOCATIONS

Site 7: Mokulēi‘a Beach Park

Directions: Take H1 west towards Wai‘anae then connect to H2 North Wahiawa/Schofield. Continue straight (Schofield-bound) and eventually the freeway will slope down, merging onto a road (99 North). With Schofield Barracks on your left, proceed toward Wai‘alua. At the fork in the road, stay left heading toward Mokulēi‘a. The beach park will be on the right, across from Dillingham Air Force Base (no sign).

Parking: Parking available.

Facilities: Public restrooms and drinking water are available. Public telephones and shade are not available. Handicapped accessible.

Elevation: 0-20 feet.

Comments: Many parachutists land in the park or on the highway.

Bathymetry: Lying perpendicular to the shoreline is a coral reef, approximately 1,000 feet in length. The coastal water depth is very shallow, ranging from 1-2 fathoms and extending as far as 0.3 miles directly north of the beach park. Near shore are small patches of hard bottom composition, which include a mixture of limestone boulders, outcrops, sand, and rubble. The ocean bottom is mainly limestone. There is also diverse marine life within this range.

Site 8: Pua‘ena Point

Directions: Take H1 towards Wai‘anae. Turn off at H2 and go towards Mililani/Wahiawa. Take the Wahiawa exit, which puts you on Kamehameha Highway going north. Stay on Kamehameha Highway until you get to the second traffic light by Hale‘iwa. Turn left at the light and take a quick first right at Kahalewai Place next to the field at Hale‘iwa Beach Park. Park at the end of the street and walk around the closed gate, following the path to the point.

Parking: Park on Kahalewai Place or at Hale‘iwa Beach Park.

Facilities: Public restrooms, phone and shade available at Haleiwa Beach Park. Not handicapped accessible.

Elevation: 0-20 feet
Comments: Kahalewai Place street sign is not visible. 10-minute hike to site.
Bathymetry: Bernice Pauahi Bishop Estate privately owns a portion of the south shore of Pua'ena Point. Approximately 450 feet from the shoreline and at a depth of 2 fathoms, the bottom composition is predominantly limestone. There is also diverse marine life up to 10 fathoms and 0.2 miles from the northwest shore of this site.

Site 9: Sharks Cove

Directions: Take H1 towards Wa'ianae. Turn off at H2 and go towards Mililani/Wahiawa. Take the Wahiawa exit, which puts you on Kamehameha Highway going north. Stay on Kamehameha Highway until you pass Foodland on the right. Sharks Cove is the rocky area off to the right as you face the ocean. Pupukea Beach Park will be on the left.
Parking: Parking lot available off the main road, close to site area.
Facilities: Public restrooms, picnic table, drinking water and shade are available. Handicapped accessible.
Elevation: 20-40 feet
Comments: Participants may want to bring bug repellent. Parking lot gets full around 11:00 a.m.
Bathymetry: This site is located within the protective zone of the Department of Land and Natural Resources (DLNR). The bottom here is made up of a complex shallow reef. This reef is comprised of hard, but mostly soft bottom types. Approximately 150 feet directly north of the cove's shoreline is a wedge of scattered outcrops or boulders in a sandy bottom. There is very little change in bottom composition about 0.1 miles northeast of the shoreline. A sand patch can be found at a depth of 3 fathoms. Extending about 0.3 miles beyond the cove, the ocean depth drops to approximately 10 fathoms.

Site 10: Turtle Bay

Directions: Site is located at the Turtle Bay Resort north of Kahuku. Site area is near wedding pavillion at Ku'ilima Pt.
Parking: Hotel parking is available for a fee.
Facilities: Public restrooms, phones, drinking water and shade are available. Handicapped accessible.
Elevation: 0-20 feet
Comments: Easy, comfortable site.
Bathymetry: The nearshore bottom at this site drops off to approximately 1 fathom and extends 100 feet from the shoreline. The bottom drops off to 5 fathoms approximately 0.38 miles (2,000 feet) from the shoreline. Nearshore bottom is dense limestone with a smooth, pavement-like surface. 0.38 miles from the shoreline the bottom composition is uniformly limestone with some reef slope areas.

WINDWARD LOCATIONS

Site 11: Lā'ie Point

Directions: Head towards the Lāi'e Shopping Center on Kamehameha Highway in Lā'ie. Directly across from the L&L Drive-Inn is Anemoku Street. Take this street to the top of the hill, then turn right on Naupaka Street. The point is at the end of the street.
Parking: Ample parking is available at the site.
Facilities: No public facilities or shaded areas are available. Handicap accessible.
Elevation: 0-40 feet
Comments: Lā'ie Point juts out into the ocean further than any other point of land on O'ahu and perhaps even the neighbor islands. It offers a magnificent view of the coastline on both the north and south side, including one of the best views of the Ko'olau Mountains. It may get a bit windy - be prepared.
Bathymetry: Bottom composition consists of sand and shells beyond a depth of 10 fathoms with rocky bottom on the west side of the point. Approximately 500 yards from the tip of the peninsula, the ocean depth drops suddenly to 10 fathoms.

Site 12: Hau'ula Beach Park

Directions: Take Kamehameha Highway to Hau'ula. This site is at Hau'ula Beach Park located across the street from 7-Eleven and just south of the Polynesian Cultural Center.
Parking: Parking is available at the site.
Facilities: Public restrooms, phones, drinking water and shade are available. Handicapped accessible.
Elevation: ~0 feet
Comments: The site is located at a nice, comfrortable, beach park. Visability is limited due to low elevation - binoculars are recommended.
Bathymetry: The coral reef offshore is approximately 0.3 miles in length and 0.2 miles from the shoreline. Bottom composition is mostly sand at a depth of10 fathoms and silt at 50 fathoms. On the west end, the ocean bottom consists of cobbles or small boulders. The rest of the ocean bottom within 1 fathom is consists of a mixture of hard and soft bottom types. There are some scattered boulders less than 1 fathom on the east side of this site. Approximately 825 yards from the shoreline the depth is 3 fathoms. The ocean depth reaches 10 fathoms approximately 1,600 yards from shore.

Site 13: Kualoa Ranch (Bunkers)

Directions: Take Kamehameha Highway to Kualoa Ranch, across from Kualoa State Park (Chinaman's Hat). The site is located at the bunkers approximately 1 mile up the dirt road from the parking lot.
Parking: Parking available about one mile from site at ranch lot. Volunteers will carpool to the site.
Facilities: No public restrooms, telephones,drinking water, or shade are available at the site. It is possible to drive to restrooms. Not handicapped accessible.
Elevation: ~150 feet
Comments: Viewing site is located at the WWII bunkers on the cliff above Kamehameha Highway on Kanehoalani Range. Excellent viewing position.
Bathymetry: Approximately 475 yards from shore, the depth drops off to 6 fathoms. The nautical chart depth contour maximum is up to 60 fathoms. Its ocean bottom is shallow and consisting mainly of sand, boulders, and limestone outcrops.

Site 14: Pyramid Rock

Directions: Take H3 Kane'ohe-bound to the main gate of the Kane'ohe Marine Corps Base. Take a left at the second traffic light (Mōkapu Street). Cross the main airstrip and continue to the end of the road. Turn right into the dirt parking lot and proceed to the far right end of the rock wall.

Parking: Parking is adjacent to the site in an unpaved lot.

Facilities: Public restrooms (portable toilets) and shaded areas are available at the site. An emergency call box is also available. Not handicapped accessible.

Elevation: ~20 feet

Comments: Military access is required to get onto base. Suggested viewing area is from the lighthouse. Climbing a steep stairway (~60 steps) is required to get to the top. Sunblock and insect repellent suggested.

Bathymetry: The ocean bottom type is hard. Nearshore depth is approximately 18 fathoms, deepening to 30 fathoms approximately 200 feet from shore. Breakers are located beyond 18 fathoms.

Site 15: Mōkapu Point

Directions: Take H3 Kane'ohe-bound to the main gate of Kane'ohe Marine Corps Base. Turn right at the second traffic light and left at the next light (by McDonalds & gas station). Take the third right and follow the road to the end.

Parking: Park on the road by the rifle ranges.

Facilities: No public facilities and shade are available at the site. Handicapped accessibility.

Elevation: ~120 feet

Comments: No protection from the elements, bring protection (i.e. water, sunscreen, hat, etc.). Site has a high vantage point which offers good viewing. Military access is required to get onto base.

Bathymetry: The intertidal area east of Mōkapu Point is made up of coral and volcanic rock. The ocean bottom composition nearshore is mostly coral and coralline algae. The bottom is sandy with submerged massive boulders beyond 10 fathoms. Approximately 400 feet from the east shore of Mōkapu Point, the depth is 3 fathoms.

Site 16: Lanikai

Directions: From H3: Take H3 Highway towards Kane'ohe. Take the Kane'ohe Bay Drive exit and follow Kane'ohe Bay drive to the right. Continue straight down Kalaheo Avenue. You will see Kailua Beach on your left. At the stop sign turn left and as you go up the hill you will be entering Lanikai.
From Pali: Take Pali Highway Kailua-bound. Go through Kailua town. The road will end in a "T". Turn right and follow the road past Kailua Beach Park (on your left). At the stop sign turn left and as you go up the hill you will be entering Lanikai. The site is located at Lanikai Lookout.

Parking: Parking is available in the unpaved lot behind bus stop across from the lookout.

Facilities: Restrooms, drinking water, and shade available. Handicap accessible.

Elevation: ~30 feet

Comments: Excellent viewing site. Binoculars are recommended.

Bathymetry: The coastline at this site is made up primarily of volcanic rock. Coastal features include patches of coral reef at 3 fathoms and 1,200 yards offshore. Approximately 2,400 yards from shore, the depth is10 fathoms. The bottom composition is made up of coral, coralline algae, and sand. The offshore bottom is mostly a hard sandy bottom.

Site 17: Waimānalo Beach Park

Directions: Travel east on Kalaniana`ole Highway past Makapu'u Point. The entrance to Waimānalo Beach Park will be on the right.
Parking: Ample parking is available.
Facilities: Public restrooms, phones, drinking water and shade are available. Handicapped accessible.
Elevation: ~0 feet
Comments: The site is not elevated above shoreline so whale watching may be a little more difficult. Binoculars are recommended. Site is ideal for student groups.
Bathymetry: Ocean depth here is very shallow. It ranges from 1 fathom nearshore to 3 fathoms approximately 400 yards from the shoreline. Bottom composition is sandy and includes coral and coralline algae. Large coral reefs are not very abundant in this coastal area. There are approximately 2 patches of coral reef.

SOUTH SHORE LOCATIONS

Site 18: Makapu'u Point Lighthouse *(Closed to public)*

Directions: Travel east on Kalaniana'ole Highway towards Makapu'u Point. Site is approximately 4.5 miles from Koko Marina Shopping Center. Look for trail entrance on the right hand side of the road before the scenic lookouts. A black gate indicates the start of the trail.
Parking: Limited parking is available along Kalaniana'ole Highway.
Facilities: No public facilities are available.
Elevation: ~400 feet
Comments: A 1-3/4 mile hike (approximately 30-45 minutes) up a 30 degree grade is required to get to the site. The semi-paved trail is at a moderate slope. Windy conditions at the top. This elevated site is ideal for whale watching. Bring water and sunscreen.
Bathymetry: This site's nearshore depth is approximately 3 fathoms and nearshore bottom composition is volcanic rock. The ocean depth at this site extends beyond 100 fathoms. The ocean bottom composition is hard and rocky (mainly basalt or limestone) and ranges 6-10 fathoms.

Site 19: Hālona Blowhole

Directions: From town: Travel east on Kalaniana'ole Highway towards Hanauma Bay. Hālona Blowhole is the second lookout area past Hanauma Bay.
From Kailua: Travel south on Kalaniana'ole Highway, through Waimanalo, past Sea Life Park and Makapu`u Point. Site is the large lookout just past Sandy Beach.
Parking: A paved parking lot is available off the main road.
Facilities: No public facilities or shade are available at site. Nearest restrooms located at Sandy Beach. Handicapped accessible.
Elevation: 70 feet
Comments: Easily accessible from the main road. High vantage point for viewing. Can be very hot, or windy, dress accordingly.
Bathymetry: The rocky bottom ocean floor of this site extends from the shore to approximately 3 fathoms. Bottom composition includes some coral, coralline algae, and sand.

Site 20: Lānaʻi Lookout

Directions: Travel east on Kalanianaʻole Highway towards Makapuʻu Point. Site is located between Hanauma Bay and Hālona Blowhole. Look for the first parking lot after the Koko Head Rifle Range.

Parking: Limited parking is available at the lookout parking lot. Parking is also available on Kalanianaʻole Highway.

Facilities: No public facilities are available. No shade.

Elevation: ~80 feet

Comments: Very bare and rocky site, but excellent for whale watching. Easy access from the road and can accommodate large groups of people.

Bathymetry: Nearshore depth is approximately 6 fathoms. Ocean bottom is predominantly a solid or hard bottom. The shoreline is rocky and mainly composed of volcanic rock.

Site 21: Hanauma Bay

Directions: Travel east on Kalanianaʻole Highway towards Makapuʻu Point. Entrance to Hanauma Bay will be on the right not far from Koko Marina Shopping Center. Participants will meet in the upper park picnic area.

Parking: Ample parking is available in the Hanauma Bay lot ($1 per vehicle).

Facilities: Public restrooms and drinking water are available near the parking lot, but not near the remote observation site. No shade available. Not handicapped accessible.

Elevation: 80-120 feet

Comments: Whale watching is conducted from Palea Point. A short hike is required to the lookout (~15 minutes).

Bathymetry: Hanauma Bay is commonly known for its diverse aquatic population. The surrounding ocean bottom composition is hard rock bottom.

Site 22: Spitting Caves

Directions: Travel east on Kalanianaʻole Highway towards Hawaiʻi Kai. Turn right onto Lunalilo Home Road. Turn left onto Poʻipū Drive. Stay on Poʻipū Drive and turn left onto Lumahai Street. Just before Lumahai Street comes to a dead end, look for a blue sign on the right-hand side (slightly obscure) marking the public access walkway to the point.

Parking: Street parking is available on Lumahai Street.

Facilities: No public restrooms, telephones, or drinking water are available at site. Not handicapped accessible.

Elevation: ~50 feet

Comments: A short hike is required to get to the site. Follow a steep to gradual public access trail that runs between the homes. Access can be difficult for some. Not recommended for children. The site is a bare and steep (in some places) area that runs along the cliff faces of Portlock. Views are excellent for whale watching, though the area tends to be windy. Heavy boat traffic.

Bathymetry: This site is mainly steep volcanic rock. Its nearshore depth is approximately 3 fathoms with a bottom composition of coral, coralline algae, and sand. Gravel is found beyond 20 fathoms.

Site 23: Diamond Head Lookout

Directions: Heading east on Diamond Head Road, look for the second lookout after the lighthouse.
Parking: Street parking is available along Diamond Head Road (stalls fill up quickly).
Facilities: Public telephones are available. No restrooms, water, or shade. Handicapped accessible.
Elevation: ~120 feet
Comments: Convenient access to the site. Excellent site for whale watching due to its elevation, though binoculars are recommended. Very hot and humid, come prepared.
Bathymetry: The shoreline here is a sandy beach. There are several big patches (~6) of coral reef in the viewing vicinity. The shallow waters contain large rocks at a depth of 1 fathom. The ocean bottom is composed of coral and coralline. The depth, approximately 800 yards from shore is 3 fathoms. The shallow bottom nearshore is a hard bottom type. This hard bottom type is a mixture of sand, rubble, limestone outcrops, and boulders.

Site 24: Magic Island

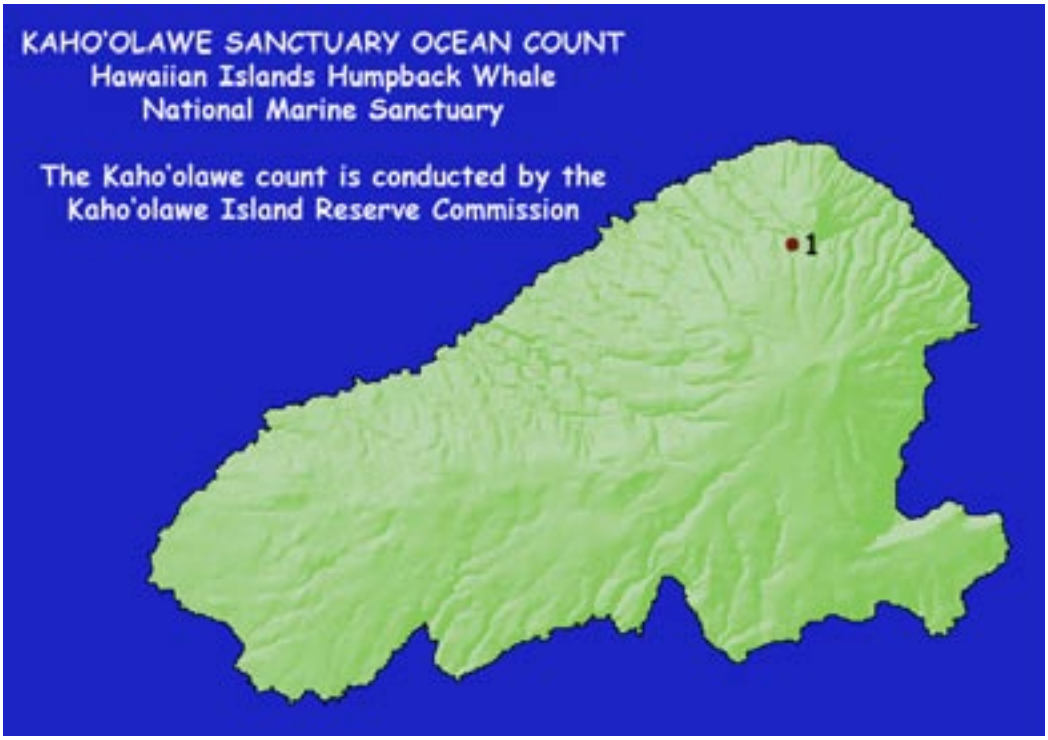
Directions: Site is located across from Ala Moana Shopping Center. Walk out as far as possible on the walkway, then proceed to the rocky breakers (rock wall jetty).
Parking: A paved parking lot is available, but is often crowded.
Facilities: Public restrooms, phones, drinking water and shade available. Handicapped accessible.
Elevation: 0-10 feet
Comments: Good family area for viewing, however binoculars are recommended. There are plenty of ocean activities to watch in addition to whales.
Bathymetry: The foreshore here is flat and made up of sandy material. The depth here is no more than 1 fathom. The outer boundary of Magic Island is a man-made shore that may be basalt "blue rock". From this outer boundary the ocean depth ranges from 3 to 200 fathoms. There is a vast amount of coral reef found within the waters on the west and east side of this site, however there are no reefs directly in front of the site. The shallow ocean bottom past the outer boundaries is made up of limestone.

Site 25: Kaka`ako Beach Park

Directions: Located off of Ala Moana Boulevard. Turn makai (toward the ocean) on Ohe Street and proceed to the parking lot.
Parking: Paved parking lot is available.
Facilities: Public restrooms, phones, drinking water, and shade are available. Handicapped accessible.
Elevation: 20-60 feet
Comments: Good family area for viewing.
Bathymetry: Extending out to 650 yards from the sea wall, the ocean depth is approximately 3 fathoms. The make-up of the nearshore ocean bottom is mainly limestone, however the majority of the offshore ocean bottom is hard bottom.

The above 25 sites are approved sites for the annual Sanctuary Ocean Count on O'ahu. Occasionally other sites may be available. The Ocean Count Coordinator will be able to provide information on additional sites if they are available. Only those sites that are approved by the Ocean Count Coordinator will be included in the annual Sanctuary Ocean Count report.

KAHO'OLAWE SITE DESCRIPTION



Site 1: Lua Keālia Luna

Elevation: 220 meters

Comments: The Kaho'olawe Island Reserve Commission (KIRC) conducts the Sanctuary Ocean Count on Kaho'olawe. Volunteers can not register for this location. The island of Kaho'olawe is a Hawaiian cultural reserve. Unauthorized access to the island and into these waters is illegal.

Bathymetry: The shoreline of Kaho'olawe's northeast coast is predominately rocky and gently sloping. The bottom consists of coral reef substrate and sand channels, eventally reaching the 30-fathom isobath approximately 1 km offshore.

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